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ABSTRACT

This guide, which is intended for new supervisors and managers to use in an independent study setting, deals with costing, balance sheets, and budgetary control. The first section, "Matters of Cost" by J. E. and J. F. Smith, deals with the following topics: profits and productivity, principles of costing, cost control and cost reduction, fixed and variable costs, budgets, overheads, marginal costing, and checklists for supervisors. In the second section, "Jones Learns about Balance Sheets" by B. A. C. Hills, the following topics are covered: how Jones became an industrialist; first steps in bookkeeping; the meaning of the term "profit"; debtors and creditors; the expansion of Jones's business; the formation of a limited company; ways of financing increased business; and profit, reserves, and dividends. The final section, "A Look at Budgetary Control" by J. E. Smith, discusses the following: objectives and their achievement; objectives of business; techniques of budgetary control; organizational requirements; budget periods; budgets; sales budgets; links with production planning and control; production and plant utilization budgets; labor force estimate and labor budgets; departmental production cost budgets; standards; purchases and store budgets; budgets for administration, sales, and distribution costs; general financial budgets; regular comparison of actual results with the budgets; and action. Sample balance sheets are appended. (MN)

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PART I.

MATTERS OF COST

J.E. & J.F. Smith

PART II.

JONES LEARNS ABOUT BALANCE SHEETS

B.A.C. Hills

PART III.

A LOOK AT BUDGETARY CONTROL

J.E. Smith

The Supervisors 'Do-It-Yourself' Series 3

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FOREWORD

By PETER KINNEAR
Managing Director, Handy Angle Limited

"Cost control is for the Accountant! Production control is for the Shop Floor Supervisor!" What nonsense!

At long last we have a book which explodes this myth. And, who better to explode it than Joe and Jack Smith. For many years they have been campaigning against professional insularity, and now they have been persuaded to put their thoughts to a wider audience.

This is not the only thing they have done. Modern Accountancy has inevitably developed its own language; this is fine if its purpose is more accurately to define. Unfortunately, Accountancy has also developed a jargon, a mumbo jumbo, almost a MYSTIQUE. This book strips away the mystique – it is in every-day language used by you and me.

The theme is straightforward, yet seldom appreciated. Costs are only controlled *before* they occur. This can only take place on the shop floor, and the Supervisor is in the front line of the control. The Accountant can only assemble figures, and suggest directions in which savings might be made. He can do little more than that. He can supply the ammunition – it is up to the Supervisor to use it intelligently.

It is this approach, so simple, so self evident, yet so little appreciated, which makes this book sufficiently unusual that I unhesitatingly recommend it. I only have one regret! This book was not available some 15 years ago when I had my first head-on collision with Accountants – if it had been, it would have saved me many headaches; equally, it would have saved the Accountants with whom I associated, many hours of painstaking explanations!

INTRODUCTION

It is our view that every manager, whether he is an executive or a foreman, has a considerable responsibility for the sensible use of the capital resources vested in him by his management. The acceptance of this responsibility is essential for an organisation to make a profit and therefore survive. Although there is much to be done by each manager in controlling and reducing costs by observation and attention to the detailed operation of his department's activities, there remains much more to be done in the way of providing data for all managers on performance and costs.

We are sure that improvements must be made in these fields and that considerable savings in cost can be achieved.

What we set out to do in this booklet is to explain the need for cost control and cost reduction; indicate some of the ways in which they may be achieved; and show the significance of cost information and the help provided by the development of proper budgets, standards and other yardsticks of measurement. Finally, we pose some searching questions in a series of check lists for supervisors.

1 PROFITS AND PRODUCTIVITY

WHY PROFIT?

Profit is necessary to a business. Without it, there is no future for the business, no continuity, no expansion, no development.

Profits are not easy to come by; at least, a permanent pattern of profits is not.

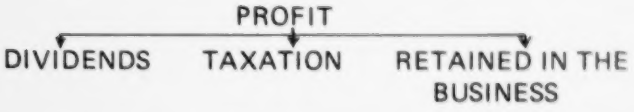
Profits equal sales minus costs. There are therefore two elements to be tackled if profits are to be a reality - *sales* and *costs*.

The foreman or supervisor can do nothing about getting sales orders. That is somebody else's job. But he can help in ensuring *further* sales by paying attention to product quality and getting work executed on time and in accordance with delivery dates.

The foreman or supervisor can also do a great deal about costs. He controls many of them himself. Much of the cost of a manufacturing business is incurred in the production and production-service departments.

HOW ARE PROFITS USED?

A simple sketch will show where the profits of a business go:-



The people who invest money in businesses – you and I, that is – expect a return on their capital. This return is in the form of *dividends*.

Tax has to be paid on a company's profits; and is also deducted from dividends paid. It is not likely to amount on average to much less than 60% of the profits made. Add together tax and dividends, and there will not be much *retained profit* unless the original figure of profit was a pretty healthy one. That profit figure will not have been healthy unless every manager in the business has done his job. *Controlling costs is one of the jobs.*

WHAT IS MEANT BY PRODUCTIVITY?

$$\text{PRODUCTIVITY} = \frac{\text{OUTPUT}}{\text{INPUT}}$$

Input is in the form of materials, labour and facilities, all of which cost money. So, if we want increased productivity, we must use all our resources and costs fully and effectively. Who can contribute more to this particular enterprise than the supervisor?

Figure 1 shows how improvements in productivity can increase profit.

Figure 1 PRODUCTIVITY, COSTS AND PROFIT

	Now Per Cent	The Future Per Cent
Material Wastage	5	2½
Labour Idle Time	10	5
Plant Utilisation—Single Shift Working	70	77

	Now		The Future	
Effect of above on Output	10,000 units	Per unit	11,000 units	Per unit
Effect on Costs	£	£	£	£
Materials	10,000	1.00	10,725	.98
Labour	5,000	.50	5,225	.47
Overheads, Variable	5,000	.50	5,250	.47
Overheads, Fixed	5,000	.50	5,000	.46
Total Costs	£25,000	£2.50	£26,200	£2.38
Sales	£27,500	£2.75	£30,250	£2.75
Profit	£2,500		£4,050	

The greater profit in the future will provide £1,550 more with which to replace old plant, buy improved plant and maintain continuity of employment – oh yes, and with which to pay more tax!

2. PRINCIPLES OF COSTING

WHAT ARE THE COSTS?

Basically, there are three distinct areas of cost to be controlled:-

(a) Direct Materials
(b) Direct Labour
(c) Overheads

The Direct Materials are those which actually go to make the product and form a part of the finished job. These materials, if we are not careful, we waste and scrap.

The Direct Labour is the productive labour; that labour which contributes directly to a change in the shape or conformation of the materials or to their chemical or other processing.

The Overheads are all those other costs, so necessary to manufacturing, which are not directly applicable to the product. There are really three categories of overheads:-

(a) Indirect Materials – the tools, the consumables, the oils and greases, the washed rags, etc.;

(b) Indirect Labour –the labour of cleaning and sweeping, handling materials, inspection, maintenance and shop clerical work;

(c) Indirect Expenses – a big area of cost, including power and lighting, heating, and all the building occupation costs, depreciation of buildings, plant and equipment, salaries, and so on. Many of these indirect costs are not incurred in the production departments themselves, but in the provision of ancillary services in the factory.

If we add all these items – materials, labour and overheads – together, we have the total cost. But do not be misled about overheads. They are not all incurred in the factory. Many are incurred in the offices and in the selling and distribution departments, and these need controlling as much as the manufacturing overhead costs.

How much money is spent in these other areas will become apparent when you take note that some very large British organisations spent as much as £60 million on television advertising.

So there is a very wide range of costs to know about and to control. It is a big job and it calls for an attentive supervisor. But cost control pays off.

3. COST CONTROL AND COST REDUCTION

WHAT IS COSTING?

Costing is merely intended as a service to management – at all levels. It is the function of a specialised department which finds out what the costs are and where they are incurred, and then uses this most valuable information. What for?

(a) To build up product costs and provide data for estimating future costs and fixing prices;

(b) To set budgets and standards to measure efficiency and control costs;

(c) To make others aware what their costs are.

WHAT DOES A COST DEPARTMENT DO?

A cost department analyses costs. It takes all the costs of operating a business which come through on purchase invoices, stores requisitions, piecework tickets, time cards, petty cash vouchers, etc., and analyses them:

(a) to products – all the direct items of cost which can be attributed to products or "cost units";

(b) to departments – all costs are allocated to the "cost centres" where they are incurred (a cost centre may be a machine or group of machines, a piece of plant or process equipment – any location, in fact, which incurs cost at a rate worthy of separate identification);

(c) by nature of expense – we want to know what our costs are, under the headings of materials, labour, tools, maintenance, power, etc.

A cost department can work out overhead rates, which can be used in planning for the recovery of overhead costs in the selling prices of products. This is better done on a departmental rather than a "blanket" basis.

Thus we could say that for a business as a whole the costs were:-

	£
Direct Materials	15,000
Direct Labour	20,000
Overheads	30,000

A suitable overhead rate would then be 150 per cent of direct labour. But this is not the normal way of working. A separate rate

is calculated for each cost centre; the press shop, the machine shop, the assembly department, and so on. Why? Because each cost centre is different and the impact of overheads is different.

This means that the cost department has to allocate certain costs directly to each department or cost centre, and apportion others which cannot be charged directly. Allocation is the charging of cost directly to those cost centres which incur the cost. Apportionment implies that the cost cannot be charged direct to any one cost centre but must be spread on some equitable basis over several. Thus, milling cutters issued from the tool stores could be allocated directly to the milling machine cost centre, whereas a monthly electric power bill for the factory as a whole would be apportioned on some technical basis to cost centres for which there would be no separate meter readings available. Works management salaries, internal trucking, the boiler house, are further examples of costs which must be apportioned.

Only when we have carried out these two processes of allocation and apportionment shall we know the total costs of each cost centre from which to calculate overhead rates. Figure 2 (page 10) illustrates cost allocation and apportionment.

So, we hope, the cost department can do a useful job. But the department's efforts are only a service – it cannot itself control cost. It is the man on the spot who can control cost; the cost office can give him vital information on what the controllable costs are. These, by the way, are the ones that can be allocated, not those which are apportioned.

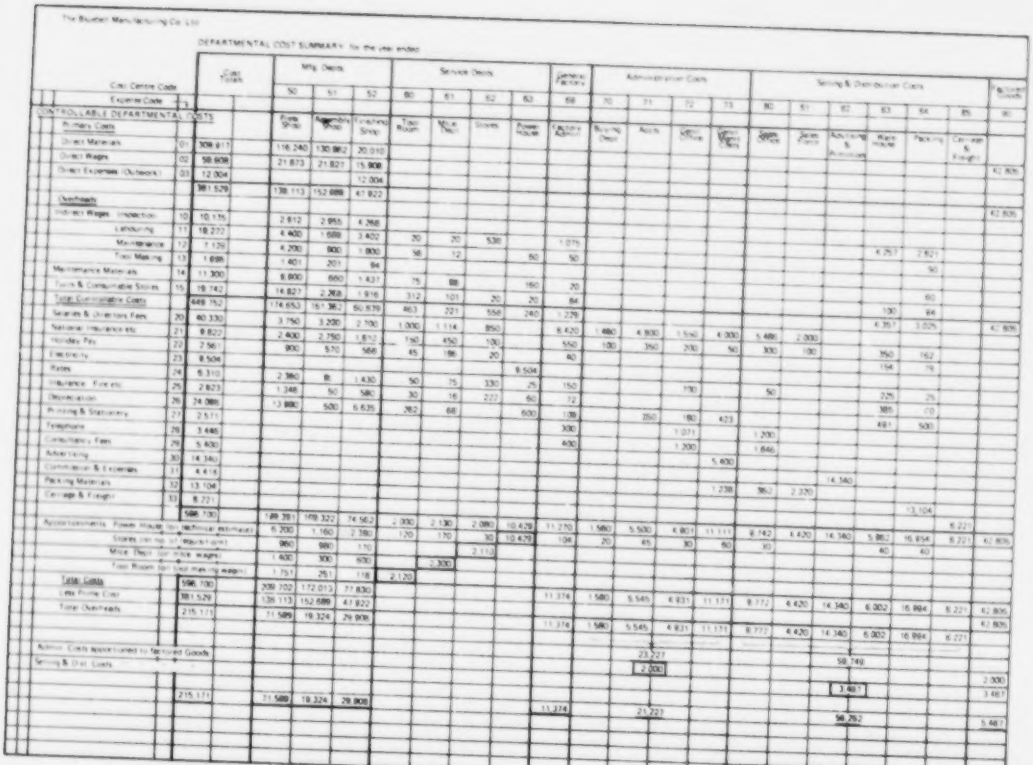
WHAT IS COST CONTROL? HOW IS IT CARRIED OUT?

When we talk of cost control, we mean regulating by executive action the costs of operating a factory or a shop. There can be little cost control without:-

(a) Some knowledge of what costs ought to be, and

(b) Real control of costs at the source. (This means constant vigilance by the manager or supervisor, because he is the man who has the major responsibility for "costs at the source.")

As supervisors, we can get a great deal of information from the cost office about what our costs are; what they used to be; the trend. We can get the cost office to compare our costs with standards or budgets, so that it will be apparent to us what variances have arisen.



The Blunket Manufacturing Co Ltd

DEPARTMENTAL COST SUMMARY for the year ended

Cost Centre Code		Cost Totals	Mfg. Depts.			Service Depts.				General Factory	Administration Costs				Selling & Distribution Costs						Balance Sheet
Expense Code			50	51	52	60	61	62	63	68	70	71	72	73	80	81	82	83	84	85	90
CONTROLLABLE DEPARTMENTAL COSTS																					
Primary Costs			Punch Shop	Assembly Shop	Finishing Shop	Tool Room	Mtce. Dept.	Stores	Power House	Factory Admin.	Buying Dept.	Accts.	Office	Wages Office	Sales Office	Sales Force	Advertising & Promotion	Warehouse	Packing	Carriage & Freight	
Direct Materials	01	309 917	116 240	130 962	20 010																
Direct Wages	02	50 608	21 873	21 827	15 908																
Direct Expenses (Outwork)	03	12 004			12 004																42 805
		372 529	138 113	152 689	47 922																
Overheads																					
Indirect Wages - Inspection	10	10 135	2 812	2 955	4 368																42 805
Labouring	11	18 272	4 400	1 688	3 402	20	20	530		1 015								4 757	2 821		
Maintenance	12	7 129	4 200	800	1 800	98	12		60	50									90		
Tool Making	13	1 695	1 401	201	94																
Maintenance Materials	14	11 300	6 800	660	1 437	75	88		160	20									60		
Tools & Consumable Stores	15	19 742	14 827	2 268	1 916	312	101	20	20	84								100	64		
Total Overheads Costs		649 752	174 653	161 362	80 870	463	221	550	240	1 229								4 357	3 035		42 805
Salaries & Directors Fees	20	60 330	3 750	3 200	2 700	1 000	1 114	850		8 420	1 680	4 930	1 560	4 000	5 480	2 000					
National Insurance etc.	21	9 822	2 400	2 750	1 812	150	450	100		550	100	350	200	50	300	100		350	162		
Holiday Pay	22	2 56	900	570	568	45	186	20		40								156	78		
Electricity	23	8 504							8 504												
Rates	24	6 310	2 360	80	1 430	50	75	330	25	150			700		50			325	25		
Insurance: Fixtures	25	2 823	1 348	50	580	30	16	222	60	72								380	70		
Depreciation	26	24 086	13 800	500	6 635	262	68		600	109		350	180	423				491	500		
Printing & Stationery	27	2 571								300			1 071		1 200						
Telephone	28	3 446								600			1 200		1 846						
Consultancy Fees	29	5 400												5 400							
Advertising	30	14 340												1 278	360	2 220	14 340				
Commission & Expenses	31	4 416																	13 104		
Packing Materials	32	13 104																		8 221	
Carriage & Freight	33	8 221																			
		580 730	149 391	169 322	74 562	2 300	2 130	2 080	10 479	11 270	1 880	5 930	4 801	11 151	9 742	4 420	14 340	5 882	16 954	8 221	42 805
Apportionments: Power House (to machine minutes)		6 700	1 160	2 380	170	170	30	10 479	104	20	45	80	60	80				40	40		
Stores (on to of requisitions)		960	680	170			2 110														
Mtce. Dept. (on to direct wages)		1 400	300	600		2 300															
Tool Room (on to tool making wages)		1 751	251	118	2 120																
Total Costs		596 700	309 702	172 013	77 830					11 374	1 580	5 545	4 931	11 171	9 772	4 420	14 340	6 302	16 994	8 221	42 805
Less Prime Cost		381 529	138 113	152 689	41 922																
Total Overheads		215 171	71 589	19 324	29 908					11 374	1 580	5 545	4 931	11 171	9 772	4 420	14 340	6 302	16 994	8 221	42 805
													23 227								
Admin. Costs Appropriated to Factored Goods													2 000				58 740				
Selling & Dist. Costs																					2 000
		215 171	71 589	19 324	29 908												3 487				3 487
										11 374			23 227				58 252				5 487

11

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Figure 2

But in the end the controlling job is ours, and this means:–

(a) attention to, and sensible economy in, everything we use: materials, labour services and our own departmental overhead expenses;

(b) keeping the shop busy; good utilisation of plant and labour;

(c) constant liaison with those specialists who are responsible for planning, methods improvement; labour payment schemes, tooling, provision of materials, drawings, etc.;

(d) setting and cultivating a good example and the right atmosphere for economy; getting our personnel really interested in good practices which will increase efficiency and reduce costs;

(e) nagging; if conditions are not right for efficient economical production, we should make sure that our superiors know, and are reminded if necessary.

WHAT IS COST REDUCTION? HOW DOES IT COME ABOUT?

Cost reduction is the process of achieving real and permanent reductions in the unit cost of products manufactured, without impairing their suitability for the use intended.

It comes about by constantly challenging and improving accepted practices and standards, and is not restricted to the factory. Cost can be reduced by attention to management itself; how the business is organised, planning, design, markets and sales, factory layout, methods of production, handling and the provision of services.

HOW DOES IT AFFECT YOU?

Through
- the reduction of material usage; direct materials, tools and consumables;
- the constant search to improve materials handling, storage and issue;
- reducing waste of labour, and improving labour utilisation.
- improving working conditions and human relationships.
- better utilisation of all works services, power, fuel and water, maintenance, inspection and the clerical services.
- maximum use of plant and machinery.

You can have purges, or you can have a systematic approach to the problem of cost reduction. The latter is of course preferable.

Figure 3 gives some indication of the significance of cost reduction.

Figure 3.

THE WORTHWHILENESS OF WHITTLING DOWN LOST TIME AND SCRAP

Lost time, mins. per hour	10	8	6	4	2	0
Work time, mins. per hour	50	52	54	56	58	60
Pieces per week of 40 hours	800	832	864	896	928	960
Scrap percentage	10	9	8	7	6	5
Net good output	720	757	795	833	872	912
Profit £	180	189	199	208	218	228
+		9	19	28	38	48

4. FIXED AND VARIABLE COSTS

WHAT IS ALL THIS BUSINESS ABOUT FIXED AND VARIABLE COSTS?

If we run a car, what do we answer when people ask us how much it costs to run per annum? We are not strictly accurate unless we say "So much a year plus so much a mile," because the road fund tax, the insurance and depreciation are virtually fixed yearly costs, whereas the other costs – petrol, oil, maintenance and tyre wear – are related to the use we make of the car.

In other words, some costs are fixed and some are variable. It is the same in a manufacturing business. Rent, rates, salaries, depreciation are fixed costs, by and large. Materials, tools, the direct labour bills, power consumption are more or less variable with the level of productive activity – variable, that is, in accord with such factors as machine hours. And this distinction is important. Take a look at Figure 4 to see the implications of this.

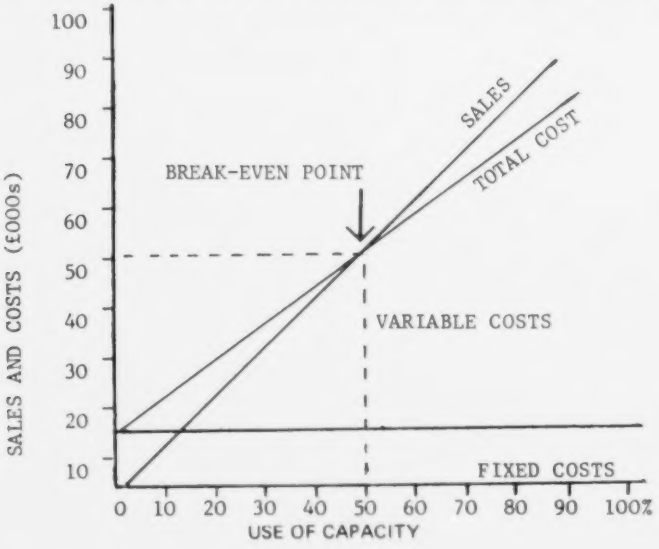
It means, putting it simply, that every product sold and every order executed makes some sort of contribution towards meeting the fixed costs. This contribution is the margin between the variable or out-of-pocket costs and the sales price of the product or job. Only

when enough products have been made to provide contributions which cover all the fixed costs does a business start to make a profit. This is clearly demonstrated on the break-even chart in Figure 5.

Figure 4 EFFECT OF VOLUME ON PROFIT

	Factory operating at		
	50 per cent Capacity	70 per cent Capacity	90 per cent Capacity
Sales	£ 50,000	£ 70,000	£ 90,000
Costs: Variable	35,000	49,000	63,000
Fixed	15,000	15,000	15,000
Total	50,000	64,000	78,000
Profit	Nil	6,000	12,000

Figure 5 THE ABOVE REPRESENTED IN CHART FORM



WHAT DOES THIS MEAN?

It means that there are two things to do, two most important factors to watch:-

(1) The volume of work going through the shop must be at the maximum. Admittedly, this is partly to do with the sales boys, but we must execute the orders when they get them. The fixed costs represent the facilities available: the floor space, the buildings, the plant and equipment, the foremen and managers. We have got to make good use of these facilities.

(2) We have also to control the variable costs. It is no use putting a great volume of work through the shop if we allow out-of-pocket costs to get out of hand; if we allow very much more scrap and waste material; if we allow the burning-up of tools; if we incur excess and unreasonable labour costs; and so on.

When we talk of controlling costs we mean keeping them within acceptable limits. And we must not forget the quality of the products either. We must not let this suffer, otherwise there will be no volume at all in the future.

5. BUDGETS

IS THERE ANYTHING TO BE SAID FOR BUDGETING?

A budget is a plan, a chart for the voyage that every business is making. We think all will agree that it is a good idea to know which way the ship is heading.

The idea of budgeting is quite well known, because of the national budgeting procedure, but the budgetary control used by a manufacturing business is rather different from that exercised by the Chancellor of the Exchequer. If a business can budget for its sales and production for, say, twelve months ahead, the level of cost can be determined which will lie within the budgeted sales figure. A manufacturer's cost budgets are then built up on a departmental basis.

The process of budgeting gives companies a pretty good idea of their future profits and their cash requirements, as well as yardsticks against which actual results can be measured.

We have already said that, to control costs, we should know what those costs ought to be. The use of budgetary control can help in this respect.

Also all will agree that each manager in a business at each level should know the part his department is playing and what fits into the whole pattern. It is important, therefore, to have complete and effective co-operation among all sections of the business, in the preparation and operation of the plan.

In other words, each individual's objectives must be clearly defined and understood. The cost department will provide information on how each person is doing for all items over which he has full control and for which he has responsibility, informing him promptly of those items of cost not going according to plan, and why, so that suitable action can be taken. This information will be given first in physical or technical terms; then, at the end of a suitable period (e.g., a week), these deviations can be summarised in monetary terms.

This is management by exception. It makes sure that every section of an industrial undertaking is operating in accordance with a carefully thought-out plan.

It will be appreciated that, if standards or yardsticks are established for direct materials and direct labour, this will improve the budgets and establish detailed targets for two very important elements of cost. Let us have a look at these standards which are used in the technique of standard costing.

A standard material cost is an estimated cost, based on a technical specification of the materials, determined by the technical department (making due allowance for irreducible scrap and waste) and priced by the buying department at the expected price levels over a reasonable period, e.g., a year.

A simple example of this in operation would be provided by the issue of the standard amount of material to complete a job. Any excess required to complete the job would form the basis for control. "How much" and "why" would be determined and authorised, and control action taken where possible. At the end of the week these excesses would be priced at the standard price coded to the department responsible and summarised on a Departmental Material Analsis (Figure 6, page 16) and thence transferred to the Departmental Operating Statement (Figure 7, page 17).

A standard labour cost is a predetermined cost based on an assessment of the operations, machines and type of labour necessary to produce a product efficiently, and the time taken to do so. A rate of pay is related to this. This work is best carried out by a work study department and agreed as reasonable by the supervisor.

Figure 6

DEPARTMENTAL LABOUR AND MATERIAL ANALYSES

Labour Analysis — Department: GENERAL MACHINE SHOP — Foreman: P. KELLY — Period No.: 47 — Week ending: FEB.29th

Cost Centre	Operator Name	Clock No.	Total Actual Hrs.	Direct Act. Hrs.	Std. Hrs. Prod.	Budget Hrs.	Activ. %	Effic. %	Prod. %	Non-Prod. Time (Hrs.)	Analysis
			1	2	3	4	3/4	3/2	3/1	1-2	Reasons
M.S.1	T.Brown	271	46	41	43	40	108	105	93	5	No Work
M.S.1	W.Jones	272	42	35	38	40	95	108	90	7	Breakdown
M.S.1	A.White	273	45	42	50	40	125	119	90	3	Instructions
M.S.2	J.Smith	274	45	38	35	40	87	92	78	7	Maintenance
M.S.2	A.Jackson	275	50	40	32	40	80	80	64	10	No Work
M.S.3	W.Taylor	276	48	43	48	40	120	111	100	5	Tools

Note: These figures would be summarised from time-booking cards, attendance cards and excess labour cards.

The summary total from each cost centre would be transferred to the Departmental Operating Statement (see Figure 7).

Direct Material Analysis

Cost Centre	Operator	Use-Variance		Analysis				Other Reasons
		Physical lbs.	Cost Std.Price £	Scrap Operator £	Waste Excs. £	Faulty Mater'l £	Faulty Mac'y £	
M.S.1	T.Brown	250	5.02	4.02	1.00	-	-	-
M.S.1	W.Jones	116	2.32	1.50	.50	.32	-	-
M.S.2	A.Jackson	80	1.61	-	1.61	-	-	-
M.S.3	W.Taylor	75	1.51	.51	.25	.50	.25	-
Total		521	10.46	6.03	3.36	.82	.25	

Note: Extreme abnormality of trend would be subject to a special report.
These figures are a summary of excess material requisitions.

Total would be transferred to Summary Departmental Operating Statement (see Figure 7).

Figure 7

DEPARTMENTAL OPERATING STATEMENT

Department GENERAL MACHINE SHOP — Foreman P.KELLY

Budget Std. Hrs. 240 Activity 100% — Period 47
Actual Std. Hrs. 246 Activity 103% — Week ending Feb 29th

Direct Material Variance Total (summary variance)			Op. Fault	Scrap Analysis: Waste Excess	Scrap Analysis: Material Fault	Scrap Analysis: Mchy/Tools Fault	B/Fwd. Total Variance
Classify if necessary	Qty. 521	Std.Cost £10.46	£ 6.03	£ 3.36	£ .82	£ .25	£ 539 Loss

Direct Labour: Cost Centre	Actual Hrs.	Actual Direct Hrs.	Std. Hrs. Prod.	Budget Hrs.	Activity %	Effic. %	Prod. %	Non-prod. Time: Hrs.	Non-prod. Time: Cost	Excess Labour Costs	B/Fwd. Total Variance
M.S.1	133	118	131	120	109	111	98	15	6	-	176 loss
M.S.2	95	78	67	80	84	86	70	17	7	6	82 loss
M.S.3	48	43	48	40	120	111	100	5	2	-	12 loss
Total	276	239	246	240	103	103	90	37	£15	£6	270 loss

Non-productive Time and Excess Cost Analysis

Reasons

Rate	Material	Machine	Quantity	Breakdown	Handling	No Work	Total
£ 2	£ 1	£ 1	£ 2	£ 11	£ 2	£ 2	£ 21

Overhead Expenses your direct responsibility

Detail	Code	Budget Adjusted: At 100% activity	Budget Adjusted: At 103% activity	Actual Expenditure	Variance	Reasons	B/Fwd. Total Variance
		£	£	£	£		£
Tools	32	500	515	520	- 5		-312
Indirect Labour	33	200	206	231	-25		- 96
Oils	34	50	52	48	+ 4		- 56
Waste	35	10	10	12	- 2		- 82
Overtime	36	40	41	48	- 7		-160
Total		800	824	859	-35 loss		-706 loss

Computed Variances	Fixed Overheads	Variable Overheads	Total	B/Fwd. Total
	£	£	£	£
Efficiency	+ 350	+ 125	+ 475	+ 3460
Activity	+ 400	–	+ 400	- 8580
Total	+ 750	+ 125	+ 875	- 5120

A simple example follows:–

Standard labour cards would be issued for each operation indicating the standard time and rate for the job. If excess time had to be authorised, the reason would be given and corrective action taken if possible. This would be coded to the cost centre and summarised at the end of the week at the standard rate, first to the Departmental Labour Analysis (Figure 6) and thence to the Departmental Operating Statement (Figure 7). This would also form the basis for the establishment of individual cost-centre and departmental efficiences.

6. OVERHEADS

HOW ARE OVERHEAD COSTS CONTROLLED?

We have covered two very important cost elements – direct materials and direct labour – and we will now turn to the third element – the overheads. How are these expenses controlled?

As some of the overhead costs are fixed some semi-variable and some variable, it is essential to introduce flexibility into the budget. As explained in Section 4, the variable expenses must be related to the factor which causes them to vary and adjusted according to that factor, as, for example, power costs to machine hours.

All of the overhead expenses that can be directly identified with a cost centre, e.g., a machine or a group of machines of a like nature, are budgeted for a certain level of activity, expressed either in time or in product units. After adjustment, the budget is compared with the actual expenses incurred. An example of this would be an allowance for tools of, say, £100 for an activity of 500 cost-centre hours. If the actual hours were 400, this budget would be adjusted to £80 in order to make a comparison with the actual tool costs.

Those overhead costs that are fixed are not of course adjusted, as they do not vary with activity in a limited period of time. It is their recovery from the customer through productive activity that is important. Idle time should therefore be reduced to a minimum, as this is a charge on the cost centre and, thus, the department.

Examples of these fixed overhead costs are depreciation, salaries, rent, rates and insurance. The responsibility for these costs rests of course with the senior managers who decide policy.

An example of how departmental overheads are presented is shown on the Departmental Operating Statement illustrated in

Figure 7. The cumulative position to date is also shown by bringing forward variances from the previous periods.

It is stressed that any excesses are a direct reflection on the budgeted profit. The excesses require attention – the attention of the man who is in charge of the department. What are you going about excess costs in your department?

7. MARGINAL COSTING

WHAT IS MARGINAL COSTING ALL ABOUT?

In the first place, what is the marginal cost? If we change "marginal cost" to "out-of-pocket cost" we shall begin to understand its meaning. Consider what additional costs are incurred if we produce one more unit over and above a given level of output. The direct product costs of material and labour will be incurred, as also will certain variable overheads such as power (units consumed), consumable tools, etc. But no extra fixed costs will be expended, such as rent, rates or office salaries. The additional costs of material, labour and variable overheads constitute the marginal cost.

To operate marginal costing, therefore, a clear distinction must be drawn between the fixed and the variable expenses. We will now proceed further to emphasise the difference. The fixed expenses can be regarded as management or policy expenses, incurred as a result of the policy adopted by management and therefore controlled by executive management and not the responsibility of the foreman. The variable expenses, on the other hand, can be regarded as out-of-pocket expenses incurred in sympathy with the nature and volume of production (e.g., direct materials and labour) and are generally controlled by the supervisor.

The supervisor thus has a very important interest in the marginal cost. It might almost be said to be his cost.

The difference between the selling price of a product and its marginal cost is termed the contribution or margin out of which fixed expenses are recovered, as already mentioned in Section 4. It can thus be seen how important it is to get the maximum amount

of contribution in a period. When this exceeds the fixed costs for that period, then a profit is made – and we have already seen how essential it is that we make a profit.

WHY DO WE USE MARGINAL COSTING?

Having separated the fixed and variable costs, we can now communicate cost information to those people who can actively use it. In addition, marginal costing should bring the following benefits:-

(1) Simplicity – it is uncluttered by fixed-cost apportionments and their arbitrary determination;

(2) Responsibility – control is more easily achieved by presenting to supervisors figures of costs over which they have positive control;

(3) Policy – management can see more clearly the effect of policy decisions, can make more accurate cost comparisons, and can appreciate the importance of the attainment of a high level of output.

KEY OR LIMITING FACTORS

By relating a product's contribution to the key or limiting factor, whether it be materials in short supply, a certain type of skilled labour or plant time, the contribution can be maximised. A simple illustration will assist understanding of this very important principle:-

Product	Material	Labour	Variable Overhead	Marginal Cost	Selling Price	Contribution	Percentage of Sales
A	1	2	3	6	8	2	25
B	2	3	1	6	8	2	25
C	3	1	2	6	8	2	25

We assume that all use the same material, plant and labour. All products have the same contribution as a percentage of sales, that is $\frac{2}{8} \times 100 = 25$ per cent. However, when contribution is related to material the contribution percentage is as follows:

A $\quad \frac{2}{1} \times 100 = 200$ per cent.

B $\quad \frac{2}{2} \times 100 = 100$ per cent.

C $\quad \frac{2}{3} \times 100 = 66\frac{2}{3}$ per cent

If material is in limited supply it is obvious that the policy should be to make and sell A, then B and finally C.

If, however, labour and/or machine time is limited, the contribution percentage will be as follows:-

A $\quad \frac{2}{2} \times 100 = 100$ per cent.

B $\quad \frac{2}{3} \times 100 = 66\frac{2}{3}$ per cent

C $\quad \frac{2}{1} \times 100 = 200$ per cent.

The policy will then be reversed, and C will now be the most profitable product, having the highest contribution per hour or percentage of wages.

Figure 5 further illustrates this technique of presentation by showing the effect of volume on profit. When the contribution is equivalent to the fixed costs the break-even point is reached and further contribution is profit.

8. CHECK LISTS FOR SUPERVISORS

It is good for a supervisor from time to time to sit back and ask himself "How am I doing?" This exercise will be assisted by the following cost-reduction check lists specially designed for the supervisor. How do you measure up to your job, in relation to cost control and cost reduction? Don't forget that everybody has only his own experience with which to think.

(a) PERSONAL

Do you resist change?
Do you in any way resent criticism or other people's ideas?
Have you ever put a crazy idea to work?
Do you show regular average improvements?
Do you get help from the costing staff?
Do you take the view that looking after costs is the cost accountant's job?
Have you ever asked "How high are my costs in relation to what they should be?"
Do you use the help of specialists?
Are you pressing for more and better planning?
Do you look only for a big kill, or are you happy to plug the cost leaks one at a time?

(b) MATERIALS

Is sufficient attention paid to salvage?
Is there carelessness about small items supplied in bulk?
Are saved materials mixed so that they have to be sorted out?
How can the supplier help?
Is constant attention paid to the problem of yield?
Is the minimum loss known and the maximum permitted loss published?
Is there a constant search for more output per unit of material used?
Is there any playing safe, starting with more stock than necessary?
Are there starting-up losses, and do these occur because there is so much around?
Is the possible use of other materials ever considered?
Are the reasons for using some materials still valid?
Are there investigations on the subject of buying or making?
What should materials cost? Have you a budget or standard?

(c) LABOUR COSTS AND WORKER PERFORMANCE

Do you know what your labour force should be for the desired output – have you any budget or standard for manpower?
How diligently do your people work?
What methods do they use?
What part of their production is scrap?
How much extra work do they perform?
Do you know how much time they lose between jobs?
Is waiting time hidden?
Are losses reported?
Is there any "hunting time"?
Do you encourage people to report waiting time and losses?
Do your personnel get the right instructions?
Do you encourage people to ask for "the next job"?
Do you have "the next job" ready?
Are you saddled with slow and worn-out equipment?
Are there any loose incentives?
Is any excess labour cost attributable to excess material (e.g., too much metal on castings)?
Are there any difficulties with poor tooling or poor set-up?
Are you changing set-ups all the time for specials?
Do you attempt to cultivate job interest?
Do you train your men?
Do you suffer learning losses?

(d) SCRAP

To what extent are production defects within your control?
To what extent are they primarily the responsibility of other departments?
Are there any instances where the materials are poor?
Do you look for the causes?
What are the product hazards?
What are the operation hazards?
Could it be poor tools?
Do you let them see their scrap?
Is preventive inspection used to the full where economically possible?

(e) TOOLS

Have you personnel on incentives who burn them up?
Do you insist on economical speeds?
Where are the tools maintained and sharpened?
Do you use a tool crib or unofficial stock points?
Do youobserve tool life?
Is there any breakage of dies and moulds through faulty set-ups?
Have you any "works of art" which last too long?
Do certain expensive tools hold back methods improvements?
Are there any tools which are just plain obsolete?

(f) MAINTENANCE

Do you investigate your breakdowns carefully and so limit "hunting time"?
Do you find out why breakdowns occur and do everything to prevent recurrence?
Are the basic "clean-and-oil" preventive maintenance duties carried out?
Do you cultivate with your operators the idea of THEIR machines?
Do you cultivate the use of danger signals?
Is maintenance planned?
Are any machine records kept? Is any comparative costing done?

PART II

JONES LEARNS ABOUT BALANCE SHEETS

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JONES LEARNS ABOUT BALANCE SHEETS

1. HOW JONES BECAME AN INDUSTRIALIST

Mr. Jones became an industrialist as a result of a talk one winter's evening with his close friend Studdy Smith. Chips Jones was a woodworker by trade, and a craftsman of considerable local repute. He was employed as a pattern-maker by an engineering firm, but during his own time his craft became his hobby – he designed and built beautiful pieces of furniture which were admired by all who saw them. Studdy Smith, who was an accountant in the same firm, particularly held his work in high esteem, and it was in fact while he was examining Chips's latest product – a small coffee table – that the idea was born.

Studdy was certain that his friend could make a lot of money by selling the products of his craft, and was urging him to do so. Chips, however, pointed out that the "real" money was to be made in the larger pieces, such as expensive cocktail cabinets, fine desks, and so on – and how could he attempt such work and carry on his job at the factory? – there would just not be sufficient hours in the day. Studdy at once suggested that he should concentrate on furniture making and throw up his job, to be asked equally promptly what he – Chips – was going to use for money in the meantime. Studdy said that he had an idea about that, but the immediate job was to find out how much Jones would need to finance his operations until he could sell his first piece. After a good deal of consideration a design was chosen, and the calculations were made. Chips estimated that £200 would be required for the material, and that it would take at least twelve weeks to finish the job. Mrs. Jones was brought into the discussion at that stage, and between them they decided that £50 per week would be necessary to keep the family until the first piece was sold. A minimum of £800 - £200 for the material and £600 for "wages" – would therefore be required to finance the venture, and Chips pointed out very firmly that it couldn't be done; his savings were small enough and he could not risk losing the little he had been able to set aside.

Smith then sprang his idea. He had been left a very useful sum by an uncle in Australia, and he had sufficient confidence in the venture to put up all the necessary finance himself. Needless to say,

considerable argument took place before Chips was persuaded, but in the end he was, and it was agreed that Smith should put £1000 into the business of "Chips Jones – Fine Furniture Maker."

Chips did have his way about one thing, however. The thousand pounds was to be a loan, and carry 5 per cent interest, until matters were sufficiently stabilised for terms of a partnership to be agreed.

The decision was taken in January, and later in the same month Jones placed his order for the necessary materials. These were duly delivered, together with an invoice for £200. Chips had decided very wisely not to throw up his job until he was ready to start work on his own, so this invoice represented his only commitment until in February his employment with the engineering firm finished; on Monday, February 14th, in fact, he paid the bill from the materials supplier and commenced operations.

2. FIRST STEPS IN BOOK-KEEPING

Studdy Smith said that it was important to keep proper books of account from the start. But Chips confessed to knowing nothing about accountancy or book-keeping, and asked whether his friend could help in the matter. Smith agreed willingly, and pointed out that the sooner they began the easier it would be for Chips' to understand the complication of balance sheets and profit and loss accounts – these were bound to come, because he was quite convinced that one day Chips would want to expand far beyond the modest beginnings. Studdy therefore produced a book in which he proposed to record the balance of Chips's undertaking as at that date, to be followed by others at appropriate intervals; the profit and loss calculation would be deferred until Chips had made his first sale.
The first entry was made as follows:

BALANCE SHEET OF CHIPS JONES'S VENTURE
AS AT 14th February

	Capital Employed £		Assets £
Loan	1000	Stock	200
		Cash	800
	£1000		£1000

Studdy explained that the balance sheet was in effect an accounting for the money Chips had been able to raise by way of a loan. The left-hand side, which represented the capital employed, showed the source of the money and the amount; the right-hand side accounted for this money and revealed that £200 of it had been spent in materials or "stock", and the balance of £800 remained as cash. He pointed out that, as this was an accounting, the two sides must always "balance" – after all, if Chips had given his daughter £1 to do some shopping for the house he would expect her to account in full for the pound note – so much on this item, so much on that, and so much left in loose change – the pound note given to her on the one hand and the itemised accounting for its expenditure on the other would in fact have to balance correctly.

Studdy then reminded Chips that he would have to draw from the bank at the rate of £50 per week to meet living expenses. He pointed out that if these withdrawals were treated as "wages" it would make the accounting easier to understand. After all, although it was Chips's own business, he was in fact a "direct" or "productive" worker while he was making the cabinet and entitled to draw wages as such. Chips said he would rely on Studdy's advice in such matters and concentrate on his carpentry – which he did until the cabinet was finished in the first week of June. Then he and Studdy got together and considered the financial situation. Studdy produced an up-to-date balance sheet as follows:

THE BALANCE SHEET OF CHIPS JONES'S VENTURE
AS AT 6th June

Capital Employed				Assets
	£			£
Loan	1000	Stock	(a) material	200
			(b) labour	800
		Cash		nil
	£1000			£1000

He explained that the "stock" was in this case "work in progress", i.e. it was material and labour which had yet to be "sold" to a customer. He pointed out that the cash had all gone, so that unless the cabinet was sold and paid for immediately, Chips would have to raise more capital.

Studdy stressed two important facts that the venture had brought to light so far. The first was that the capital raised was necessary because of time – the time lag between expenditure on material and wages and getting paid for the product of that expenditure. The second point was that this need for capital was a continuing one. Suppose, he said, the cabinet was sold the next day for £1000 – Chips would then need the money to finance the purchase of further material and his "wages" until he could again make a sale. But the loan of £1000 would still be outstanding and at that rate would never be cleared off. Chips saw that readily enough, and suggested that he should charge more than £1000 in order to make a profit which could be used to reduce the loan. Studdy said the first step was to sell the cabinet as well as possible and then see what should be done with the profit; Chips would need it to build up the business.

3. THE MEANING OF "PROFIT"

Jones had already contacted a likely purchaser and the next day the cabinet was sold for £1100. At their evening session the two friends drew up a "profit and loss" account:

		£
By sale of cabinet		1100
Less: Cost of sale -		
Material	£200	
Labour	£800	1000
Balance, being profit		£100

This profit was then transferred to the balance sheet which then read as follows:-

THE BALANCE SHEET OF CHIPS JONES'S VENTURE
AS AT 7th June

	Capital Employed £		Assets £
Loan	1000	Stock	Nil
Profit	100	Cash	1100
	£1100		£1100

Studdy Smith thought that not only should the loan continue but Chips should plan to expand, which might require more capital. His friend, however, said that he preferred to cross that bridge when it appeared; he did not like the idea of increasing his debt, and, besides, he now had £1100 in the bank on which to draw. However, he did agree that the cabinet had been easy to sell, and already he had two or three further orders which he would like to fulfill. So it was arranged that an assistant should be engaged to undertake the preparatory work, leaving Chips free to concentrate on the finishing.

Further material was bought for £300 and a lad engaged at £30 per week. Work on two further pieces proceeded well, but on August 16th, ten weeks later, Chips was disturbed to find that the bank balance stood at nil. A hurried consultation with Smith revealed the reason. He had paid £300 for material, and ten weeks' wages of £80 per week – £30 per week to his assistant and £50 to himself. This accounted in full for the £1100 cash, but the most advanced piece of furniture still required at least a further week's work on it. A balance sheet told the story:

THE BALANCE SHEET OF CHIPS JONES'S VENTURE
AS AT 16th August

Capital Employed			Assets
	£		£
Loan	1000	Stock and Work-in-Progress	1100
Profit	100	Cash at Bank	nil
	£1100		£1100

It also demonstrated a very important fact – that the "profit" in a balance sheet was not the amount of cash available in the business. It would be useless, said Studdy, to tell the assistant he would be paid next week's wages out of "profit", when in fact no cash was available in the bank. The profit from the original sale had been used in financing the expansion of the business, because through it Chips had been able to increase his "work-in-progress" to £1100. Meanwhile, profit or no profit, there was no money in the bank, and wages had to be paid. Studdy Smith suggested that the simplest way would be to run an overdraft at the bank until it was clear how much further capital was required.

4. DEBTORS AND CREDITORS

A week later the second piece was finished and sold. But on this occasion Jones did not come home with cash in his pocket – he left an invoice for £500 with the purchaser. He was somewhat disturbed about this, but Smith pointed out that "taking credit" was quite a normal occurrence in business, and an additional need for finance. The customer now ranked as a debtor, because he owed Jones the amount of the invoice. There was no reason, however, why Chips should not similarly take advantage of credit; more material had to be purchased and he could "take credit" in the same way.

Jones therefore bought further material for £200 in order to begin the fourth piece of furniture, and told the supplier to send in his invoice. This the latter readily agreed to do, since Jones by now had become a good customer. The supplier thus became a creditor of Jones's for the amount of £200.

It was time to spend a further evening on accounting. First a Profit and Loss Account was drawn up for the second sale:

PROFIT AND LOSS ACCOUNT – 2nd Sale

		£
By sale of table		500
Less: Cost of sale - material	£150	
labour	£300	450
Balance, being profit		£ 50

Once again transferring the profit to the balance sheet, Smith was able to show that the current position of Jones's finances was as follows:

BALANCE SHEET OF CHIPS JONES'S VENTURE
AS AT 30th August

Capital Employed	£		Assets £
Loan	1000	Stock and Work-in-Progress	1010
Profit	150	Debtors	500
Overdraft at bank	160	Cash at Bank	nil
Creditor	200		
	£1510		£1510

Chips thought this looked somewhat complicated, but Studdy reminded him of the first balance sheet and what was said at that time. The left hand side of the sheet demonstrated the source of the finance, and the right hand side what had happened to that finance. Of course, in most balance sheets creditors would be shown on the same side as the debtors, because they would be viewed in relation to each other and only the difference had to be considered as something which required financing. But Studdy considered that it was easier to demonstrate the present situation as he had shown it, although subsequently it could be changed.

The situation to date was that by means of a loan of £1000, profit of £150 and an overdraft of £160 for the two weeks' wages, together with the credit taken from the supplier, Jones had been able to finance £1010 of stock and work-in-progress, as well as a debt of £500. But of course, there was no cash at the bank. Incidentally, the stock and work-in-progress figure had been arrived at in this way – from the £1100 of the last balance sheet, £450 had been taken and turned into a sale – that left £650. Chips had then added stock to the extent of £200 by his purchase of further material and put a further two weeks' wages into work-in-progress – a total increase of £360 bringing the balance sheet figure up to £1010.

Before leaving, Smith stressed the new lesson that the balance sheet had taught. Finance was required for meeting the time-lag, not only between spending on materials and labour and making a sale, but also between making the sale and receiving one's money; the latter, however, could be countered to a certain extent by delaying payments of one's own bills, so that it was the difference between debtors and creditors which had to be financed. The position could perhaps be made more clear if he showed the history of the second transaction in the form of a time table: (see page 34)

Assuming the customer pays on 21st September, said Studdy, the build-up of Stock and Work-in-Progress from 8th June until 23rd August and then its subsequent transfer to a debt owed by his customer until September 21st all had to be "financed" before the money came in. The equivalent amount of financing required in any big Company for the same items could always be seen by examination of their balance sheet.

TIME TABLE OF 2ND SALE

Date w/e	Action	Equivalent "Financial" Action	Balance Sheet Item
June 8th	Material purchased	Invoice Paid	
" 15th	Work on 2nd piece	Wages Paid	
" 22nd	" "	" "	
" 29th	" "	" "	
July 6th	" "	" "	Stock and
" 13th	" "	" "	Work-in-Progress
" 20th	" "	" "	
" 27th	" "	" "	
Aug. 3rd	" "	" "	
" 10th	" "	" "	
" 17th	" "	" "	
" 24th	2nd Piece Sold	Customer Invoiced	
" 31st	—	—	Debtors
Sept. 7th	—	—	
" 14th	—	—	Cash
" 21st	Customer Pays	Money into Bank	

Jones and his assistant continued on the third piece until the customer paid his debt, and then more material was bought and further designs were started. After a while the overdraft disappeared, and Chips felt safer.

5. THE EXPANSION OF JONES'S BUSINESS

The excellence of the Jones products was beginning to have results, however, and orders poured in much faster than they could be handled. In Studdy's opinion, now was the time to quicken the expansion of the business. Chips admitted disliking intensely turning down good orders, but pointed out that to deal with the volume he would want to take on several assistants and find a place in which to house them. Then there would be tools to buy, a few decent woodworking machines, and, of course, the financing of larger stocks and work-in-progress, a greater number of debtors. All of which Studdy admitted; the additional finance was an essential requirement of any major increase in business. Of course, in a slow build-up the additional finance could be provided solely out of

profits, but occasions, such as the present one, arose when the profits were insufficient to finance a growing business, and further money had to be found by other means. However the first step was to have a look at the present financial position and then to assess how much capital was required.

The balance sheet was therefore brought up to date, the profit taken into account being after the payment of £50 to Smith as the agreed interest on his loan:

BALANCE SHEET OF CHIPS JONES'S VENTURE
as at a Year Later

Capital Employed	£		Assets £
Loan	1000	Stock and Work-in-Progress	1050
Profit	400	Debtors	450
Creditors	300	Cash at Bank	200
	£1700		£1700

Obviously, in Smith's view, the additional business could not be financed out of profits at this stage. In fact, all profits to date had been used in financing the increase in business represented by the one assistant. On the other hand, it was evident that it would require a long wait before they could launch out further unless more capital were put in; Smith could provide this on the same terms as previously and all that remained was to calculate the amount.

Jones ran over the outstanding orders, and also assessed the amount of business available but not taken; he thought that another good carpenter and two or three young assistants would be justified as a result. It was thought that a small building in Jones's own garden would be the most economical, and Smith knew where a hut of the appropriate size could be purchased for £2500. The machinery estimate worked out at a further £2500, and there was the question of increased debtors and work-in-progress to meet. The latter was likely to be increased nearly proportionately to the rise in turnover

if all the jobs were started together, but he thought that Jones could improve on delivery time by concentrating effort on three or four pieces at a time. He suggested that they should allow for double the stock and work-in-progress and assess this at £2200. The question of debtors was rather more difficult to gauge, but he thought that they might rise to £1500 at the prices Chips had in mind. Creditors might be approximately trebled so that the difference to be financed could be assessed at £600. The picture looked as follows:

To be financed	£	£
Building	2500	
Foundations and Erection	1000	
Machinery and Tools	2500	
Increased Stock and W.I.P.	2200	
Debtors less Creditors	600	
TOTAL		8800
Finance available		
Loan	1000	
Profit	400	
TOTAL		1400
Finance to be found		£7400

Studdy said that they had not yet allowed for working cash in the bank and he thought the figure of £7400 should be raised to £8000 – this would mean £600 cash if the estimates of stock and work-in-progress and the debtor-creditor difference were accurate – without taking into account any cash yields from profits. However, it would be as well to provide for contingencies, such as unexpected delays in customer payments, trouble in manufacture and so on; the additional cash would be a useful cushion to take unexpected shocks. He was prepared to lend Chips the further £8000 and would take no refusal.

The plans were put in hand and six months later the actual balsheet looked like this:

BALANCE SHEET OF CHIPS JONES'S VENTURE
AS AT SIX MONTHS LATER

Capital Employed				Assets
	£			£
Loan	9000	Building		3500
Profit	500	Machinery and Tools		2500
		Stock and W.I.P.		1750
		Debtors	900	
		Less Creditors	750	
				150
		Cash		1600
	£9500			£9500

Chips was pleased, but, at the same time, worried about the extent of the help his friend had given. He realised that he could not have made the progress and become a small but flourishing business were it not for the finance that Studdy had provided. On the other hand, Studdy stressed that it was the craftmanship and designing ability that Chips possessed which enabled his money to be used so advantageously. However, Chips was determined that Studdy should have a share in the business and wanted to know how this could be arranged. The first point which had to be taken care of was that Smith had lent £9000 to the business and clearly this ought to be "secured", i.e. in the event of the business failing and the assets being sold, Smith should have first call on the proceeds to the extent of £9000. That could be arranged by turning the loan into Preference Shares of the same value, with a fixed dividend rate of 5 per cent corresponding to the interest rate of the original loan. In addition, Ordinary Capital Shares could be issued which would carry dividend as the allocation of profits permitted.

6. A LIMITED COMPANY IS FORMED

As a result of these discussions, the firm of Jones and Smith, Ltd. was formed with a preference shareholding of £18,000, of which £9000 was issued to Smith in cancellation of his loan (leaving the balance available for Jones should he also wish to hold Preference Shares at any time in the future) and an Ordinary Capital Shareholding of £32,000 of which only a nominal issue of £10 each to

the two partners was to be made at that time. Further issues would be made as additional financing was required for expansion of the business, and then the shares would be taken up equally by Smith and Jones, or offered to their friends. The balance sheet previously shown would have been altered as a result of these later arrangements as follows:

THE BALANCE SHEET OF JONES & SMITH LTD.
as at .....

Capital Employed

	Authorised £	Issued £			£
Preference Shares of £1	18,000	9000	Buildings		3500
Ordinary Shares of £1	32,000	20	Machinery & Tools		2500
	50,000		Stock and W.I.P.		1750
			Debtors	900	
Profit		500	Less Creditors	750	
					150
			Cash		1620
		£9520			£9520

The cash, of course, would have been increased by the amount paid by each for the ordinary shares.

Of course, the actual balance sheet did not look like that because by the time the company was formed changes had taken place in some of the "asset" items, and there was also the cost of the formation of the company. The main point, however, was that they were now in a position to finance still further expansion by issuing ordinary shares, to the requisite value, the money paid for them increasing the "cash" item to the same extent as in the case of the £20 shown in the balance sheet Smith had prepared.

Studdy explained that this was the usual course taken in forming a company. If Chips were to look at any balance sheet he would find the capital stated as "authorised" and "issued", and the purpose was the same as in their own case – it was clearly not desirable to

issue and have paid for any more shares than were necessary to meet the financial requirements of the foreseeable future; on the other hand, they undoubtedly would require further finance sometime and it was wise to obtain the "authority" to issue further shares at the time of forming the company. Chips wanted to know why they could not arrange for a much higher "authorised" capital in case expansion into a really large company became possible, and Studdy told him that the costs of forming the company would be higher, since the capital duty which had to be paid to the Revenue Authorities was directly proportioned to the amount of capital authorised.

Smith thought that they should now regularise the matter of Jones's salary. He pointed out that the question of interest on his own loan had been dealt with by the substitution of a fixed dividend on his Preference Shares. It was only fair that Chips should take a fair and reasonable remuneration out of the business in the form of salary, because they could then decide the best use which could be made of any profits earned without having to take into consideration the payment of "reward" for Chips's work as such.

7. FINANCING INCREASED BUSINESS

Smith's prophecy of further capital being needed was fulfilled earlier than either of them expected. Within two years the hut was badly overcrowded and Chips's front room had been sacrificed as an office – and yet orders were still piling up fast.

It was time to consider the next move. Smith was preparing the balance sheet covering the previous financial year and on completion the two friends examined it in the light of the urgent need for further expansion. (see page 40)

Studdy explained that he had assumed only a ten-year life for the hut, and had, therefore, depreciated it at the rate of 10 per cent per annum of the original value. He had used varying rates for the machinery and tools, but the average had again worked out at about 10 per cent per annum. The value of this item, however, had increased from £2500 less depreciation to £3500 because of the purchase of a new sanding machine and additional tools. An important point arose in this connection, he said. In calculating the profit for the period, the total of the depreciation had been included as a cost of

THE BALANCE SHEET OF JONES & SMITH LTD.
AS AT THE END OF THE 2ND YEAR

Capital Employed	Authorised £	Issued £	Assets		£
Preference Shares of £1	18,000	9000	Buildings less depreciation		2800
Ordinary Shares of £1	32,000	20	Machinery and Tools less depreciation		3500
Profit		2530	Stock and W.I.P.		4000
			Debtors	1600	
			less Creditors	800	
					800
			Cash		450
		£11,550			£11,550

production. This was normal practice, the reason being that in addition to paying for wages, materials, etc., money ought to be set aside for replacement of the machinery and tools which were being worn out. In their case, no replacements had been bought, since the expenditure of £1660 was on additional machinery and tools made necessary by the expanding business. Therefore, said Studdy, this "depreciation" money – that which should be available for replacing worn-out machinery – ought to be in the bank. But the total of the depreciation included in the selling price of the articles for setting aside was approximately £1360 – and the cash in the bank was only £450. The position would be more clearly seen if they were to run two accounts at the Bank – a No. 1 account for keeping the money to be set aside for replacements, and a No. 2 account for drawing on for day-to-day normal business purposes. These accounts would then look like this:

		£
No. 1	Replacements Fund Account	1360
No. 2	Working Account – an overdraft of	910
	Net Cash Balance	£450

It was therefore important in considering any stated cash balance to know if replacements had in fact been bought to the extent of the depreciation included in the accounts; if not, then the difference would in fact represent a future commitment which would have to be met out of the stated cash figure, reducing the "value" of that cash figure accordingly.

Bearing this in mind, and comparing this present balance sheet with that of two years ago, it was clear that the increase in profit of £2030 and the overdraft in the No. 2 account of £910 had been used as follows:

	£
Increase in machinery and tools	1660
" " stock and W.I.P.	2250
" " Debtor/Creditor difference	650
	4560
Less Previous Cash Balance	1620
	£2940

In other words, all the profit had been ploughed back to finance their increased business, and in addition they had turned cash resources into other asset forms. The latter was also important to consider. It stressed the vital need of ensuring that the finance available, was used to the best advantage, because putting too much into machinery or stock could result in a serious cash shortage. In point of fact, Studdy thought the balance sheet now produced showed a dangerous tendency. Supposing they continued in the same way to tie up cash in stock and additional machinery, the time might come when they would want to replace an essential machine and insufficient cash would be available – after all, he said, the "replacement" money was not available today, as he had shown in his two cash accounts. He thought that stock and work-in-progress was the key to the situation and this should be kept to a minimum. For example, if they had been able to reduce the amount of cash tied up in stock and work-in-progress to £3000 the present balance sheet would have looked as follows:

Capital Employed			Assets		
	Authorised	Issued			
	£	£			£
Preference Shares of £1	18,000	9000	Buildings less depreciation		2800
Ordinary Shares of £1	32,000	20	Machinery and Tools less depreciation		3500
	50,000				
			Stock and W.I.P.		3000
Profit		2530	Debtors	1600	
			Less Creditors	800	
					800
			Cash		1450
		£11,550			£11,550

Every other item was the same, Studdy pointed out, but stock and work-in-progress had gone down by £1000 and cash had gone up by £1000, so that cash would have been available to set aside for replacements. Chips wanted to know how this could be achieved, and Studdy reminded him of the time-table he had drawn up showing the effect of the passage of time on the amount of finance required. Thus, if the second piece of furniture could have been completed and sold before the third piece was started, the timetable would have run from 8th June to, say, 10th August, instead of 21st September. The total outgoings or expenditure each week would have been the same throughout so that the stock and work-in-progress would have been reduced between 10th August and 21st September by the amount of the weekly cost, the total reduction being six weeks' worth.

Of course, the reduction of stock and work-in-progress usually resulted in earlier completion of work, and there would also have been additional profit to include, but Studdy did not want to complicate the point he was making – that taking a certain figure of capital employed, if there was any increase in one item of assets it must be at the expense of some other item or items – either necessary machinery would not have been bought or cash would be dangerously low.

8. PROFIT, RESERVES AND DIVIDENDS

Studdy stressed this further lesson to be learnt from balance sheets and again reminded his friend of the earlier lesson – that profits stated in a balance sheet did not represent the cash which was available. In the latest example profits stood at £2530 yet the actual cash was £450 only, and that was less than what was required for replacements. He pointed out that the same fact applied to all the items shown on the "Capital" side of a balance sheet. For exaple, "reserves" were only a statement of an intention to spend; the expenditure against any reserve could not be put into effect unless there was cash available, and whether there was or not was indicated by the cash figure on the asset side. He gave Chips an example. The profit for the year just ended was £1150 and instead of placing the whole amount to the Profit and Loss Account they might have decided to reserve, say, £600 for the purpose of "modernising" their plant – that is, replacing their circular saw by a more up-to-date type. The "Capital Employed" would have then appeared as follows:

Capital Employed			Assets
	Authorised £	Issued £	
Preference Shares of £1	18,000	9000	
Ordinary Shares of £1	32,000	20	
	50,000		As before
Profit & Loss Account		1930	
Reserve for modernisation of plant		600	
		£11,550	

But whether they could in fact spend £600 in buying the more modern saw in place of their existing one depended on whether there was the money available – and, as they knew, there was only £450 in the bank.

There now remained the consideration of ways and means of financing the further expansion. Smith tackled this along the same lines, as before, and, with Chips's full concurrence, made ample provision for working cash. As a result, they agreed to issue a further £20,000 of ordinary share capital, £11,000 of which they would take up themselves in equal proportions and the remainder offer to their friends. Before departing that evening, Studdy made his final point. If they were to persuade their friends to risk their money in the venture they had got to make the proposition attractive – and that would mean that in future a certain amount of the profits each year would have to be allocated to a dividend on the ordinary shares.

Chips Jones went to bed that night with the confident knowledge that he knew what was happening on the financial side of the business; as a result, he faced the next phase in their expansion without misgivings.

PART III

A LOOK AT BUDGETARY CONTROL

J.E. SMITH

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PREFACE

Industry is becoming more competitive. This is due to several factors, including international trade – the barriers are really down now. It behoves each factory to be as efficient as possible, to make the utmost use of its capital resources, if it is to survive. This means that a systematic approach to the activities of the factory is necessary and that proper planning is called for. Further, there must be serious endeavours to control performance and cost.

Since a factory offers a complex situation with complex problems, some formal system of applying planning and controls will often pay off. Budgetary control is such a technique, and it is being more widely used.

Persons in managerial positions, including supervisors, have a duty to acquire the best possible knowledge of all the techniques available to the various levels of management, and to make sure that they know how to use and take advantage of these techniques. The well-equipped supervisor is a better supervisor.

The reader of this booklet will find that the wider aspects of budgetary control are considered, as well as those directly affecting the supervisor. I make no apology for this, since I am sure that the enthusiastic supervisor will wish to extend his knowledge.

J. E. SMITH

1. OBJECTIVES AND THEIR ACHIEVEMENT

In almost everything we do, we have objectives, or goals. When we head towards the West Country on that beautiful sunny Saturday in August, it is with the intention of having a peaceful seaside holiday. When on some spring-like Sunday in March we reach for the spade, it is with the definite purpose of breaking up the soil for a good summer's crop of flowers and vegetables. In the same way, when we walk through the factory gate at 7.55 a.m. each day, it should be with the objectives of earning a living, giving a good day's work and achieving job satisfaction.

The men who have the responsibility for running the factory also have objectives; objectives of profit, customer satisfaction, a good quality product, a contented labour force, and maybe many others too. But you do not achieve your objectives without working, without doing, without carrying out what are recognised as the elements of the management job:-

(1) Planning – devising the policy and the general programme, setting up the organisation, and preparing the appropriate methods, equipment, working instructions, etc.

(2) Controlling – ensuring adquate progress and satisfactory performance, checking performance against the plans, and using the experience gained as a guide to future operations.

(3) Co-ordinating – balancing the various activities which have to be performed, allocating duties, and ensuring harmony among the members.

(4) Motivating – getting the members of the group to pull their weight effectively, to give loyalty; this involves the process of supervision and general "inspiration".

When you head towards the West Country on holiday, you have made the necessary arrangements to take your holiday at that time; you have arranged transport, hotel accommodation and finance; you have packed the clothes and equipment you need. All this has required planning.

When you take that spade out, it is with the intention of digging a certain area on that Sunday morning. Well, you can't manage it

all before you take a cup of coffee, but you can divide it up into logical sections. Each section should take about half an hour. Stick to your guns, not too much slacking, and you'll do the whole job this morning! Perhaps you don't like to regiment your gardening quite as much as this, but if you do, this is the control aspect.

When a departmental head walks through the factory gate at five minutes to eight, he is ready to face a day in his department, during which, if he is to get the best from all the facilities and persons, he must co-ordinate all the activities.

Obviously, nothing is done without enthusiasm. In those circumstances where many people have to contribute to the achievement of an objective, a leader is needed, a person who can enthuse and inspire. This is the simplest way of explaining motivation.

2. THE OBJECTIVES OF BUSINESS

One would not for a moment deny the importance to business activity of good products of good quality, a contented labour force, and job satisfaction, but the primary objectives of a business are without question:

(1) the making of sufficient profit to pay reasonable dividends and sustain growth, and

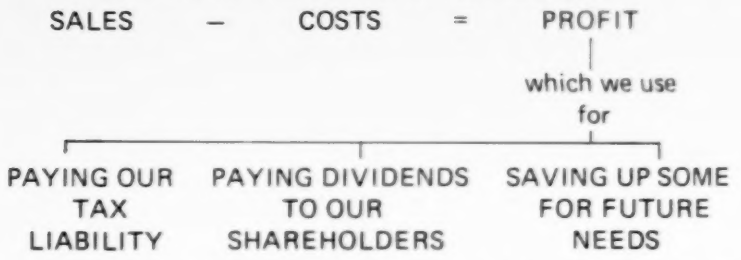
(2) the retaining intact of the organisation's capital, which means, in particular, attention to what we call the liquidity position. This requires explanation.

Profit is the difference between sales and the cost of sales. In other words, to make a profit, you must sell your products at a price which is higher than the costs of production, administration, selling and distribution, or, looking at it another way, you must find ways and means of keeping costs below already quoted and agreed selling prices. This last point must be made, since in some trades there are trade association prices for the products.

Profit is essential to the survival of the business. Without profit, dividends cannot be paid to shareholders – this is important since the business owes a satisfactory return to those who invest their money in it, and it could well be that the business will be interested in attracting more capital to it at some future time. Without profit, there will be no funds out of which to expand and modernise, and with the current inflationary trend it will even be difficult to rep!-

ace the plant and equipment. We will not get involved in another important aspect of profit-making, that is, having to pay tax out of it. After all, tax is a very disagreeable subject.

This chart will summarise what we have decided:-


SALES – COSTS = PROFIT
which we use for
PAYING OUR TAX LIABILITY
PAYING DIVIDENDS TO OUR SHAREHOLDERS
SAVING UP SOME FOR FUTURE NEEDS

I mentioned the "liquidity" position. You see, a business depends on capital to sustain its operations. This capital is limited, and consequently we must make effective use of what we have. We have to be very careful that we do not overspend on anything, but in particular on:

(1) day-to-day running costs,

(2) the amount we invest in the fixed assets of the business, that is, capital expenditure, and

(3) the amount we allow to be tied up in stocks of raw materials, work-in-progress, and finished goods.

If we do allow overspending and spending on unproductive things, we may embarrass ourselves by not being able to pay our way, and the last thing we want to see is a petition for bankruptcy.

If we can pay our way from week to week we are said to be in a sound liquidity position. So, although profit is important, the preserving of a sound liquidity position is important, too.

3. THE TECHNIQUE OF BUDGETARY CONTROL

It is now clear what our objectives are, and I have already suggested that planning, control, co-ordination and motivation are important to their achievement. We are now talking of matters of pounds, and pence – monetary matters – so it is essential that any plans we devise should be expressed ultimately in monetary terms. Any control we exercise should be directed to keeping the monetary matters in order. The goals of profit and conservation of cash resources will be achieved only by a proper co-ordination of the activi-

ties of all the departments of the business, and by motivating all levels of management and workpeople to the idea of efficiency and productivity.

There is a technique of management which will help greatly in this; the technique of budgetary control. Do not be put off by the high-sounding name – the concept is a relatively simple one. It is this: if you express your policy and objectives as monetary plans, and if you then observe your progress against these plans, and take corrective action when and where there are deviations, you stand a better chance of achieving your objectives than if you have no such systematic approach. Although budgetary control is very closely tied to the accountancy function, in the sense that much of the routine recording work and presentation of data are effected by the accounts and costing functions, it must be regarded as a formal way of expressing the elements of the management job. It is another of those "tools of management".

The implication of the phrase budgetary control is that there is "budgeting" and "control". Budgeting means expressing one's plans in quantitative and monetary terms. After all, in any business, one enters into a new year of operations with a fairly clear idea of what one intends to sell and where, the likely volume of sales at certain price levels, hopes and estimates of what the costs will be, what capital will be needed to finance operations, what stocks one will need to hold, one's manpower requirements and a host of other things. Why not put all this down in formal fashion, expressed in quantitative and monetary terms?

Let us go back to your trip to the West Country in August. You could produce a detailed budget for this, couldn't you? It would comprise a statement of exactly where you are going, and on what day and at what time, the means of transport, the accommodation which has been arranged, full details of known costs and some estimates of those not known, a schedule of clothing requirements and so on. No one is suggesting that you should take quite such a cold, formal and precise look at a holiday fortnight as this, but it could be done, couldn't it? You have to be careful when you start budgeting at home, but perhaps you know this already.

Control is the work which follows, the guidance and regulation of things to ensure that the plans are adhered to as far as possible,

the corrective action which has to be taken. Yes, just like putting your foot on the accelerator pedal or brake to get out of a tricky situation – remedial action.

This may involve us in a greater sales effort to get more orders, in improving departmental efficiencies to get greater output or reduce costs, or in pruning stocks and work-in-progress because too much money is tied up in them.

We may wish to have control procedures at home, too, on spending, for example. But be careful how you go about it. You might not want to save a pound and lose a wife.

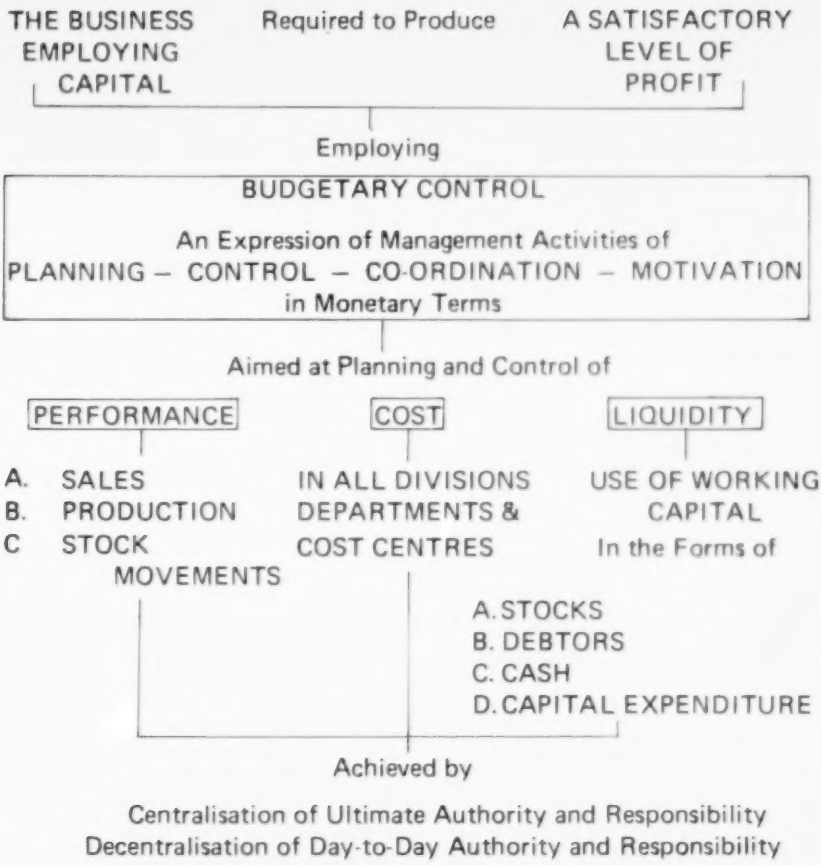
What are the features which budgetary control deals with? We can sum them up as Performance, Costs and Liquidity. When we talk of performance, we mean sales, production, movements of stock and the really physical things. When we refer to costs, we mean costs throughout the business as a whole, on the shop-floor in the office, in the sales department. When we mention liquidity, we mean cash resources, and the use of cash for stocks and the like.

4. ORGANISATIONAL REQUIREMENTS

One of the aims of a system of budgetary control is that of interesting individual managers at all levels in the acceptance of budget responsibilities. Budgetary control, in other words, is a way of splitting up the business into the natural divisions and departments, budgeting the performance and cost requirements of each section, and then setting up these budgets as the targets to aim at, the yardsticks and measures against which to control.

Figure 1 summarises the aims of budgetary control and closes with the point that it has the effect of centralising the ultimate responsibility and authority and decentralising the day-to-day responsibility and authority. What this means is that individual managers running their own departments are given the full responsibility for the output, quality and cost of those departments, and are given the necessary authority to ensure that agreed objectives and plans – budgets if you like – are met. But in the end the ultimate authority is the central authority, the managing director maybe, who, after all, is really the top budget administrator. The ultimate responsibility to the board of directors also rests with this person, so that he more than anyone will wish to see realisation of the budget, which

Figure 1



he will do by pulling the strings of the various departments together.

What is most important before the technique of budgetary control is used is to ensure that an organisation is ready for it. Ready for it in the sense that there is a clear structure and pattern of organisation of which everyone is aware. Figure 2 is an example of a business organisation chart, and it is suggested that, unless something of this sort is in existence and there is knowledge in an organ-

Figure 2

ORGANISATION CHART FOR A TYPICAL MEDIUM SIZE MANUFACTURING BUSINESS

isation of the lines of authority, it will be impossible to get the full advantages from a system of budgetary control. This does not mean,

by the way, that a published organisation chart always represents the true facts of an organisation structure, but at least it is a start to formalising the responsibilities and authorities of individuals.

After all, we are hoping to get proper control of the output, quality and cost of sections, departments and divisions of the organisation. To do this, we must make sure that each of these departments has a boss, has someone who is recognised as the manager or supervisor, and further, it is important that this manager or supervisor should know who his subordinates are and to whom he reports.

The supervisor – any supervisor of any department – has responsibilities for output, quality and cost, and is therefore an important person in a scheme of budgetary control. We said "any supervisor", because whether a supervisor is in charge of a production department or a service department, whether there are products of the department which he administers, or services rendered, in the form of maintenance or power supply, he still has these responsibilities. The supervisor is usually regarded by top management as a key man with full control of the activities of his department. A means of measuring the performance of the department is a good opportunity and a challenge to the supervisor, because, after all, top management judges the supervisor's effectiveness on the performance and cost of his department. The use of budgetary control means that there is a measure available.

5 THE BUDGET PERIOD

It will be obvious that if one constructs a budget it will only be operative for a certain known period. In most businesses the budget period will be one year, a calendar year, or the normal business accounting year. Budgeting beyond a year is regarded in many circles as equivalent to crystal-gazing: on the other hand, it is reasonable to expect to be able to forecast tolerably well for twelve months ahead. Much will depend on the natural time-cycle of production and sales in the business. In short-time-cycle production (including most mass and large-batch production) a year is a long accounting period; on the other hand, in long-time-cycle production, such as shipbuilding a two- or three-year budget period might be more appropriate.

There must be much shorter "control" periods, that is, periods when reporting back takes place. It would not be suitable to review

progress against budget only once a year, so the budget period is usually broken down into shorter reporting-back periods which we call "control periods".

Budgets require revision if they are going to be realistic targets. Although normally a budget will remain operative for the whole of the budget period, it will have to be kept under constant review and may require revision during that period.

6. BUDGETS

A budget is a plan of action to achieve an objective; its very formulation assigns a purpose to everything. And anyone who has had the duty of constructing budgets of any sort will know what a good mental exercise it is. The mental exercise arises from the questions one must ask of oneself, and the thought which must be given to constructing the answers.

The important questions in budgeting for a manufacturing business would seem to be:-

(1) What is likely to be sold and at what value?

The answer to this leads to the further questions:

(2) What, therefore, must be produced and what capacity will be required? How does this compare with the capacity available?

(3) How much will the operation cost in terms of running cost, and what are the cash and capital expenditure requirements?

The starting point for the budgetary control procedures in most undertakings is a Sales Budget. This is inevitable, since all businesses depend for their existence on a continuing demand for their products. On the other hand, some factor other than sales can be the "key factor" in budgeting. A business may be short of the capital necessary to finance what could be sold, for example. So that it may, in some instances, be necessary to think first of this "key factor" before attempting to construct a sales budget. Let us consider further examples of this.

Your business may be engaged in the production of meat products, using pigs as the basic raw material. The products we are thinking of would be sausages, pork pies, black pudding, with the more regular bacon, gammon, pork, etc. What would be the key factor

of such a business? It might well be the availability of raw materials – pigs – for in this trade there has been this shortage over the years. There is no point in preparing a sales budget for twice as much sales product as the pigs will make.

In many businesses, there is a considerable shortage of a particular class of skilled labour. Output may be restricted by this shortage. Again the ultimate sales budget must be related to this.

7 SALES BUDGETS

The preparation of a sales budget is largely related to an influenced by the type of article or product being marketed, but as a general guide two main factors provide the basis for sales forecasting: (1) sales achievements in previous periods; (2) any estimated change for the next period.

In the first case, those responsible for selling should be able to determine from information available:

(a) The territorial sales;

(b) a comparison of enquiries received and actual sales effected within territories;

(c) an indication of the intensity of competition in various areas or territories, and of the necessity for further sales effort and for price adjustment to meet such competition;

(d) the adequacy of profit margins previously achieved.

In the second case, it is vitally important in any progressive business to establish:

(a) competition, with the aid of careful market research and customer contact;

(b) what sales promotions and product developments are planned;

(c) the effect upon trading conditions of national and international affairs.

A simple example of a sales budget is shown in Appendix A (page 67). It will be appreciated that the unit of measurement used will be one appropriate to the organisation: it will not always be possible to express one's output in terms of standard products.

8. LINKS WITH PRODUCTION PLANNING AND CONTROL

This is the point at which the potential productive capacity of the plant should be assessed, and allowances made for normal stoppages for cleaning, repairs, etc., in order to determine the volume of production that the company can comfortably undertake. In a process involving several departments, the assessments will be made individually to discover the limiting factor. The determination of capacities will be of assistance in the planning of long-term development. The layout of the machinery and the sequence of production will be constantly examined to ascertain the best method of operation.

There are obvious advantages to be gained from a steady flow of production. The answer lies in Production Control, which includes planning, scheduling and inspection organised in such a manner that the supply and movement of materials, the performance of machines, and the activities of labour are controlled and co-ordinated. It is also essential to have a very close liaison between the production progress requirements and purchasing. Properly planned Production Control should eliminate stoppages caused by delays in the supply of materials and transfers of work-in-progress between the departments. Machine breakdowns will often be minimised by a system of planned maintenance; regular inspection, oiling, and replacements of minor parts of a machine, will prevent excessive wear and tear.

When the production programme is planned in advance, the purchasing of raw materials, stores items, etc., can be made more economically. It is possible to take advantage of long-term contracts and the minimum amount required in stock to satisfy the needs of production can be more readily assessed.

The stock level of finished goods is more difficult to determine. It is impossible to generalise since it will depend on the type of business, the nature of the goods, storage capacity and cash available. Large stocks tie up capital which could be more gainfully employed in production or development, or merely as an investment. On the other hand, flexibility in stock levels gives stability of production and all the benefits to be derived from it. The level of finished stocks can be a vital factor in profitability, and it is only by forward planning of sales and production that the best policy for a particular business can be found.

9. PRODUCTION AND PLANT UTILISATION BUDGETS

It is only when the sales budget is reaching the final stage that thought can be given to the preparation of a realistic production budget. First, it is necessary to make a decision on the required trend of stock. In many organisations this means that detailed budgets showing stock movement will be prepared. Though such stock movement may be only approximate, it should now be possible, when they are combined with the sales budget figures, to assess the production required. This can then be set out in the most suitable units of measurement, that is, in numbers of product or in tons of output, or (perhaps more suitable in many cases) in terms of hours of plant capacity.

If the latter measurement is used it is possible to build up what is, in effect, a plant utilisation budget. A simple example of such a budget appears in Appendix B (page 68). This example is in respect of one department making only two products, and it assumes that some knowledge of product operation times is available. It will at least serve to illustrate the point that this stage is directed to assessing and maximising the use of capacity.

One can, of course, go much further than this and produce a completely detailed schedule of production, or components to be produced. Much will depend upon the nature of production, whether it is of standard or non-standard type.

10. MAN-POWER ESTIMATE AND LABOUR BUDGET

The man-power estimate is a quantitative statement of the number of employees required to achieve the budgeted output of the factory. It is necessary to analyse such labour requirements by departments and by the appropriate grades of labour. The assessing of such details may be carried out in many ways:-

(1) from estimates made by supervisors or particularly experienced workpeople.

(2) from past and present records of performance and efficiency, perhaps adjusted by arbitration with the departmental managers or supervisors concerned.

(3) by calculations based on proper work measurement.

The man-power estimate is a preliminary to the preparation of a

labour budget. Such a budget will take into account the type of worker required, the appropriate wage rates, the incentive schemes in force or contemplated, necessary overtime, and so on, with the ultimate objective of establishing the budgeted labour cost of each department, so that this may be incorporated in the departmental cost budget as a whole. For a sample labour budget, see Appendix C (page 69).

11. DEPARTMENTAL PRODUCTION COST BUDGETS

When budgets for sales and production are compiled, it is necessary to budget the cost of the production and to build this up through the individual departments. For the purposes of planning and controlling production and expenditure the budgets may be built up on the basis of a normal week's output.

It has already been decided how many units of each product it is intended to produce in each production period, and the budgeted cost of this production will be evaluated under the elements of cost. See the departmental cost budget in Appendix D (page 70), as an example of this breakdown.

Now comes the all-important question – who shall set these cost budgets? The logical answer is that there should be teamwork between the departmental manager or supervisor and the costing personnel who have historical data on the department's operating costs.

This team will be required to assess the likely level of each item of cost to meet the production budget requirements. We are talking now of the costs which are immediately controllable in the department by the manager or supervisor. What are these? Normally, they would be the costs of:-

(1) Direct Materials – those materials which form a part of the finished product and are identifiable with the product, and are actually issued to or within this department,

(2) Direct Labour – that labour which is engaged in the production of the articles manufactured, that labour which actually changes the shape, conformation or properties of the material,

(3) Controllable Overheads – those other expenses of the department, which are not directly attributable to the

products, but are still necessary to the productive effort, such as Indirect Materials (tools, consumable materials), Indirect Labour (cleaning and sweeping, feeding and clearing away from machines, materials handling, storekeeping and timekeeping and shop clerks), and Indirect Expenses (power, use of services of all sorts).

Obviously the budgeting of all these items of cost requires historical data and considerable experience. The supervisory experience of the manager or supervisor and the cost data available to the cost man should blend well in this exercise.

Normally, although an expense may be attributable to a department, if it is not controllable by that departmental head it will not be included in his budget. Take as an example the cost which we call "depreciation". This is the charge to a department for the provision of buildings, plant and equipment – an assessment of the diminution in value of these assets as a result of use and the passage of time. This will normally be included in a separate "Fixed Costs" budget, not in the departmental budgets.

The task of budgeting his costs is a wonderful experience for a departmental supervisor.

Departmental cost budgets, similar to the one in Appendix D (page 70), will have to be prepared for each production department, and also for each service department. These departmental budgets will be the yardsticks against which the actual production and expenditure will be measured. Some responsible official must be answerable for every type of expense. Preferably it will be the departmental manager or supervisor. This procedure facilitates the investigation of variances from the budget, and should result in closer control of expenditure.

12. STANDARDS

What can help a great deal is the existence of physical standards and standard costs. As examples of the sort of standards which will be of value, we have:-

(1) standard times computed by work measurement for operations on the various products made,

(2) standard material specifications for products,

(3) knowledge of the consumption of loose tools and consumables per hour of machine time.

Knowledge of this sort will make budget construction so much easier. It makes possible the building up of what we call a "flexible budget", which is a cost budget for different levels of production activity.

In some organisations, product standard costs are calculated. These are calculations of what the product costs ought to be. If these are constructed as a result of a teamwork exercise, involving the departmental supervisor, they will form a satisfactory basis for production cost budgets. Examples of standard product costs are shown in Appendix E (page 71).

13. PURCHASES AND STORES BUDGETS

When all departmental cost budgets have been prepared, and the precise requirements of direct and indirect material and of purchased services and finished goods for resale are known, it is possible to give thought to the purchasing of such requirements and the desired movements of stores stocks where stocks are kept. It will be clear that the requirements of plant, machinery and other fixed asset items also come into these considerations.

If a detailed purchase budget can be built up, then not only is an instrument of cost control available, but also a tool of planning. The person responsible for buying is enabled to plan his purchase contracts on a long-term basis; and management is in a better position to plan the cash requirements of the business for the budget period. Naturally, the budgeting of purchases takes into consideration existing and required future stocks, prices and movements, purchase order commitments already outstanding, and economic factors.

14. BUDGETS FOR ADMINISTRATION, SELLING AND DISTRIBUTION COSTS

By and large, we are now dealing with costs with a definite "fixed" characteristic. Although many items of cost in these divisions may tend to vary somewhat with the volume of business, many others are relatively fixed. Detailed budgets need to take into account both the nature of the expense items and the separate fun-

ctions within the divisions. Again, they should be drawn up in consultation and in agreement with departmental managers. The policy cost part of the administration costs budget can be set by top management and is "fixed", in the sense that it varies only at the will of top management. The office costs portion can be set with reference to past cost data and, in some cases, to known standards of performance. Assessments of staffing and stationery consumption would be determined by the office manager.

With regard to selling costs, there is the relationship between such costs and sales turnover to be considered. Take, for example, the costs of advertising and special sales promotions – it is often virtually impossible to make an estimate of likely results. And yet, to some extent, it is a matter of what selling costs can be afforded, and in what directions the money can most profitably be spent. Here a wise and lively sales manager is a tremendous asset: he will have in mind a certain expenditure to bring an approximate level of sales.

Some elements of distribution costs are fixed. Others are variable and depend upon the level of activity planned, movement through the warehouse, amount of goods to be packed, and volume of goods to be transported. Here again, some standards of performance may be available, particularly with regard to packaging and transport.

15. GENERAL FINANCIAL BUDGETS

It is somewhat ambitious in the early stages of applying this technique of control to go beyond the budgets already mentioned, but for the technique to be completed, and for the full benefits to be felt, certain other budgets need to be completed. These are:

(1) Cash Budget,
(2) Capital Expenditure Budget, and
(3) Debtors and Creditors Budget.

A Cash Budget is shown in Appendix F (page 72). You will immediately see that it ties in with other budgets. It involves a detailed plan of income and expenditure, starting with the opening balance of cash, and assessing income (against sales) and expenditure (against purchases, wages and the like). Drawn up in the four-week periods mentioned previously, such a budget will pinpoint likely future shortages or surpluses of cash – useful information indeed!

A Capital Expenditure Budget is a simple enough statement of the planned expenditure during the budget period on buildings, plant and machinery, motor vehicles or any other fixed assets (excluding repairs and maintenance). This obviously calls for careful consideration of developments within the organisation over a long period.

Debtors and Creditors Budgets are forecasts of the movement in the balances of money owing and owed, and must be directly related to Sales and Purchases Budgets. The construction of a Debtors Budget is also shown in Appendix F (page 72).

The three budgets mentioned above will serve the useful purpose of establishing the adequacy of the cash resources of the business, period by period, and will enable advance arrangements to be made for acquiring additional resources. This is illustrated in the Cash Budget, where at the end of the third period an overdraft is anticipated.

We may have been talking recently of budgets which do not directly affect the departmental head or supervisor, but they are significant budgets of which he should have some knowledge. You may like to take a look at Appendix G (page 73), which is a complete chart of budgets, showing how they are inter-related: this gives one a complete picture of the budgets which are required, and shows how Budgetary Control covers all the areas of business activity.

16. REGULAR COMPARISON OF ACTUAL RESULTS WITH THE BUDGETS

It is necessary to decide what are suitable control periods for checking actual performance and cost against the budgets. These should preferably be relatively short periods, if the information is to be of use and is to be acted on to some purpose. In larger businesses using budgetary control, the control period is often a calendar month or a four-week month; in the examples which follow, a four-week period is used.

An essential to the preparation of regular control-period data is the prompt writing-up of the business accounts, although there are short-cut methods which can be used, when a specialist is supervising the clerical work, to avoid a complete posting of transactions. What is required in order to get the fullest possible information from the system is:-

(1) sales, analysed suitably;
(2) details of production, by products and by departments;
(3) costs, suitably analysed;
(4) details of items affecting the liquid position – cash, stock, debtors and creditors in particular.

In Appendix H (a) (page 74) is a Profit and Loss Statement for a control period, where the actual figures are compared with the budget figures. The advantage of this presentation lies in the comparison of actual figures with a set of budgets, and in the information which is yielded on the areas of variation. For instance, it becomes obvious that sales have fallen short of the target, and that production must also be down on budget: this is made apparent by the stock increase being less than was anticipated. And yet, in spite of this, some of the departmental costs are in excess of what was budgeted. Now what is required is more detail.

SALES

A suitable analysis of sales can reveal which products or which areas are falling down on target. Another value of a detailed sales analysis is that instances where sales prices are being varied from the budget prices can be revealed. So it is possible to say, as precisely as is needed by a business, to what extent the sales variance is a matter of "quantity", and to what extent it is a matter of "price". This, in fact, sets the pattern for analysing variances in cost also, as we shall see.

DEPARTMENTAL COSTS

If the costs of a department can be marshalled as in Appendix H (b) (page 75), and compared with the budgeted costs, the same sort of information can be made available for use and action.

In the example shown, the original budget of cost for the original budget of output is shown. Because actual output is not in accordance with the budget, the next column shows the "flexed"* budget of cost for the actual output.* Because output is 96 per cent of budget, all the figures shown in column 2 are 96 per cent of those shown in column 1. The actual costs in column 3 are then compared with the adjusted budget figures to reveal variances.

The first thing which strikes one in comparing the figures in Appendices H(a) and H(b) is that the total variance is not the same.

This is because more detail is now available, and it is possible from a knowledge of actual production to adjust the budget. Consider what information can now be extracted.

Some material costs are in excess of budgets. A little further observation of the figures can reveal how much this is due to the excess use of material, and how much it is due to prices in excess of the anticipated prices. Some labour is also in excess of budget. Is this because of low efficiency of labour, more time needed to produce the required quantity, more work people, overtime working, etc.? Or is it due to excessive rates? Consider the excess power cost. What is the reason for this? Excess use of power, or higher prices per unit?

It will now be apparent that analysis can reveal the basic reasons why the profit made is not in accordance with budget. The same rules apply to the liquid position. The cash balance may not be adequate because of poor credit control; stocks may not be moving as desired because of unbalanced sales and production. The reasons can be determined by the use of this technique and the remedies applied by the appropriate people.

17. ACTION

If the reasons for variances are speedily known, action to improve performance and reduce cost can and should be taken. Where there is a clear delegation of responsibility to implement the budgets, corrective action is called for where there has been a failure to reach the objective. Otherwise, all the effort which has gone into the technique will have been wasted.

The position of a departmental supervisor is quite clear. He is one of the "action men". He is one of the persons to whom a control responsibility has been delegated. He cannot be expected to take action on the general financial position, but he can be expected to do something about the performance and costs of his own department. And this makes him a key man in the Budgetary Control scheme and the achievement of the objectives of the business.

* When we talk of a flexed budget we mean a budget which has been adjusted for the actual level of activity attained. Quite obviously, the cost allowance to a department must be related to that department's performance.

APPENDIX A

THE WARMECTRIC MANUFACTURING CO. LTD. (An imaginary company making domestic electrical products.)

SALES BUDGET FOR YEAR .....

PRODUCTS	Budgeted Selling Price	SALES AREAS							
		North		South		Midlands		Total	
		Units	Value	Units	Value	Units	Value	Units	Value
	£		£		£		£		£
1 Kw. Electric Fire	6.00	15,000	90,000	25,000	150,000	20,000	120,000	60,000	360,000
2 Kw. Electric Fire	7.60	10,000	76,000	16,000	121,600	14,000	106,400	40,000	304,000
1 Kw. Radiant Convector	12.80	11,000	140,800	16,000	204,800	13,000	166,400	40,000	512,000
2 Kw. Radiant Convector	14.80	6,000	88,800	8,000	118,400	6,000	88,800	20,000	296,000
1 Kw. Tubular Heater	13.00	9,000	117,000	11,000	143,000	10,000	130,000	30,000	390,000
2 Kw. Tubular Heater	15.00	6,000	90,000	8,000	120,000	6,000	90,000	20,000	300,000
Immersion Heater	15.60	7,000	109,200	7,000	109,200	6,000	93,600	20,000	312,000
		64,000	711,800	91,000	967,000	75,000	795,200	230,000	2,474,000

In view of the seasonal nature of sales this will be broken down into four-week periods.

APPENDIX B

The WARMECTRIC Manufacturing Co. Ltd.
PLANT UTILISATION BUDGET for year .....

PRODUCTS	Production Budget Quantity	Standard Production Time	Total Budget Production Time	DEPARTMENT POWER PRESSES		
				30 ton	20 ton	10 ton
	Units	Mins	Hours	Hours	Hours	Hours
1Kw. Electric Fire	60,000	8	8,000		4,000	4,000
2Kw. Electric Fire	40,000	10	6,667		4,667	2,000
1Kw. Radiant Convector	40,000	12	8,000		4,000	4,000
2Kw. Radiant Convector	20,000	14	4,666		2,666	2,000
1Kw. Tubular Heater	30,000	6	3,000	3,000		
2Kw. Tubular Heater	20,000	8	2,667	2,667		
Immersion Heater	20,000	0	–			
			33,000	5,667	15,333	12,000
No. of Presses Available				4	11	8
Available Press-Hours	Single	Shift		6,720	18,480	13,440

APPENDIX C

The WARMECTRIC Manufacturing Co. Ltd.

MANPOWER ESTIMATE/LABOUR BUDGET POWER PRESS department Year .....

	MANPOWER REQUIREMENTS						Annual Working Hours Per Employee	Total Working Hours	Std. Labour Cost per Hour	Budgeted Labour Cost
	Direct Operators			Indirects		Totals				
	30 ton	20 ton	10 ton	Inspection	Labouring					
Required Standard Hours	5,667	15,333	12,000			33,000			£.p.	
Labour Required							2,000			
MSA	4	10	6			20		40,000	2.00	80,000
MSB	4	5	4			13		26,000	1.80	46,800
MSS			2	3		5		10,000	1.60	16,000
MUS					5	5		10,000	1.40	14,000
FSS		5	4	5		14		28,000	1.20	33,600
FUS					3	3		6,000	1.00	6,000
	8	20	16	8	8	60		120,000		
	£30,400	£70,000	£54,400	£21,600	£20,000					£196,400

APPENDIX D

THE WARMECTRIC MANUFACTURING CO. LTD.
DEPARTMENTAL COST BUDGET for year .....
POWER PRESS department

PRODUCTION BUDGET

	Standard Hours £	£
Production Costs:		
Materials – Sheet	372,360	
Expanded	16,520	
Wire	60,480	449,360
Labour – Press Operators	154,800	
Inspection	21,600	
Labouring	20,000	196,400
Tools	9,800	
Consumables	16,800	
Power	7,000	
Maintenance	15,200	48,800
Costs not controllable by foreman		
Depreciation of Plant and equipment	14,800	
Apportionment of rent, rates and other fixed costs	5,200	20,000
		£714,560

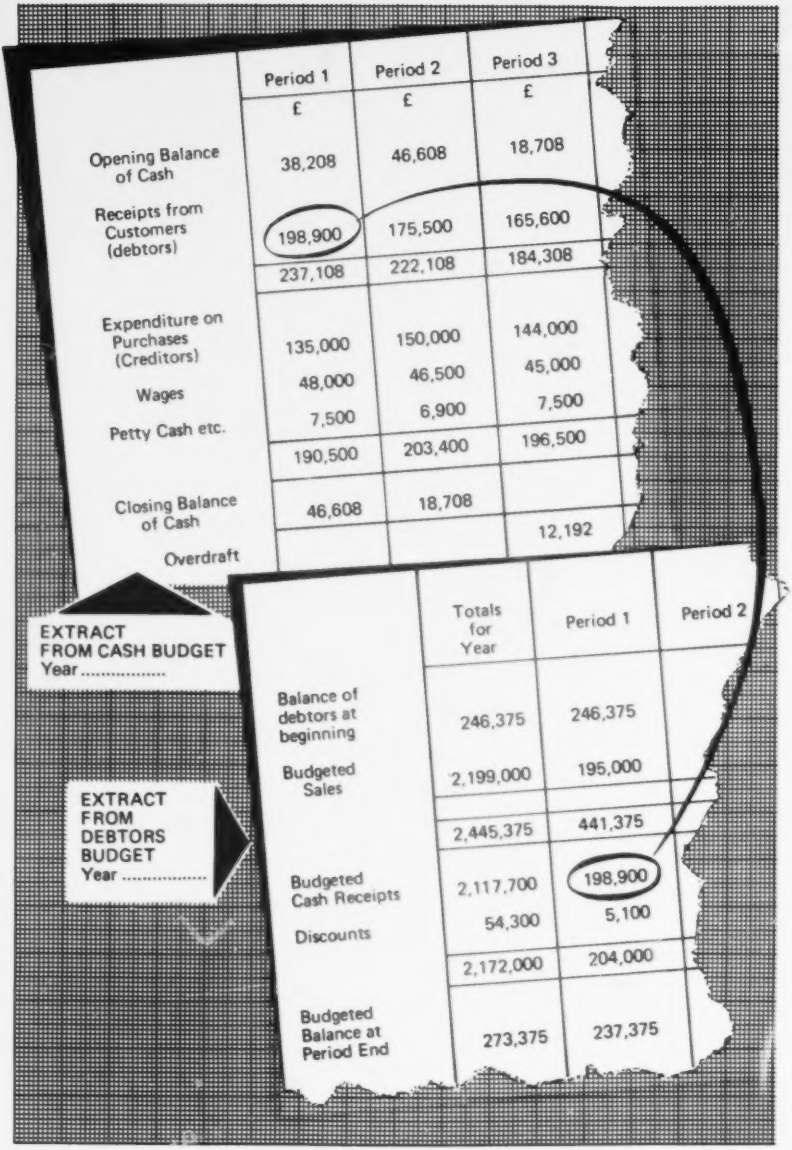
APPENDIX E

The WARMECTRIC Manufacturing Co. Ltd.

STANDARD WORKS COSTS of products

	WARMWELL FIRES				THE WARMVEC	
	1Kw.		2Kw.		2 Kw. Radiant Convector	
	£.p.		£.p.		£.p.	
MATERIALS						
M.S. Sheet	1.10		1.10		3.55	
Expanded Metal	-		-		0.30	
Guard Wire	0.16		0.16		0.16	
N.S. Wire	0.30		0.60		1.82	
Fireclay Formers	0.20		0.20		1.30	
Switch	-		0.28		0.54	
Flex	0.20		0.20		0.20	
Sundries	0.30		0.30		1.25	
	2.26		2.84		9.12	
SUB-CONTRACT						
Chromium Plating	0.14		0.14		0.14	
LABOUR GRADE	Std. Min.		Std. Min.		Std. Min.	
Pressing-Fly F 1.40 hr.	3m	0.07	3m	0.07	6m	0.14
Pressing Power M 1.50 hr.	8m	0.20	10m	0.25	12m	0.30
Assembly F 1.30 hr.	20m	0.43	30m	0.65	40m	0.86
Finishing M 1.50 hr.	4m	0.10	6m	0.15	12m	0.30
	35m	0.80	9m	1.12	70m	1.60
OVERHEADS						
Works:						
Pressing Power 600p. hr.		0.80		1.00		1.20
Pressing Fly 100% D.L.		0.07		0.07		0.14
Assembly 100p. hr.		0.32		0.50		0.66
Finishing 200% D.L.		0.20		0.30		0.60
		1.39		1.87		2.60
		£4.59		£5.97		£13.46

APPENDIX F



	Period 1	Period 2	Period 3
	£	£	£
Opening Balance of Cash	38,208	46,608	18,708
Receipts from Customers (debtors)	198,900	175,500	165,600
	237,108	222,108	184,308
Expenditure on Purchases (Creditors)	135,000	150,000	144,000
Wages	48,000	46,500	45,000
Petty Cash etc.	7,500	6,900	7,500
	190,500	203,400	196,500
Closing Balance of Cash	46,608	18,708	
Overdraft			12,192

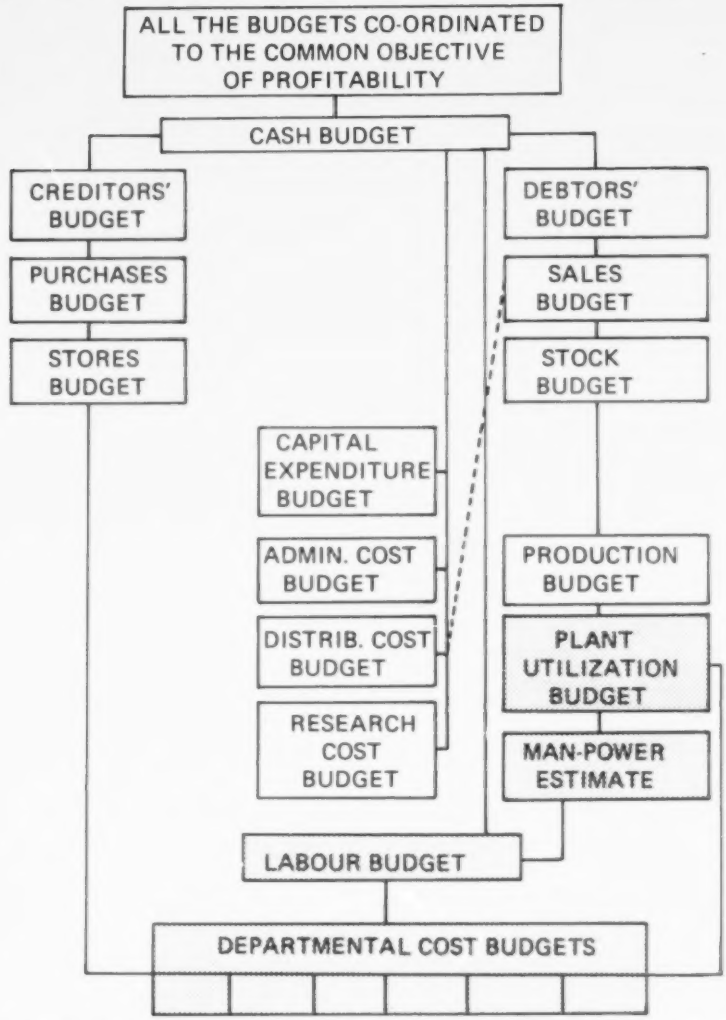
EXTRACT FROM CASH BUDGET Year .....

EXTRACT FROM DEBTORS BUDGET Year .....

	Totals for Year	Period 1	Period 2
Balance of debtors at beginning	246,375	246,375	
Budgeted Sales	2,199,000	195,000	
	2,445,375	441,375	
Budgeted Cash Receipts	2,117,700	198,900	
Discounts	54,300	5,100	
	2,172,000	204,000	
Budgeted Balance at Period End	273,375	237,375	

APPENDIX G

CHART SHOWING INTER-RELATIONSHIP OF BUDGETS



The shaded budgets are those directly affecting the factory supervisor

APPENDIX H(a)

The WARMECTRIC Manufacturing Co. Ltd.

MONTHLY PROFIT AND LOSS STATEMENT

Week ending 26th September 1981 Period 1

	Budget	Actual	Variances	
			Gain	Loss
	£	£	£	£
SALES	260,000	255,400		4,600
Stock Increase	5,600	1,000		4,600
	265,600	256,400		
COSTS:				
Production:				
Department: Power Press	51,340	49,524	1816	
" Fly Press	4,800	3,856	944	
" Assembly	109,060	108,248	812	
" Finishing	62,000	64,368		2,368
Office Administration	9,600	9,640		40
Selling and Distribution	10,400	10,560		160
	247,200	246,196	3572	11,768
				-3572
PROFIT	18,400	10,204		8,196

APPENDIX H(b)

The WARMECTRIC Manufacturing Co. Ltd.

DEPARTMENTAL OPERATING STATEMENT

Week ending Period 1

POWER PRESS DEPARTMENT Supervisor .....

	Col.1	Col.2	Col.3	Col.4		
	Budget to meet Planned Programme	Adjusted Budget for Output	Actual Results	Difference Gain	Difference Loss	Remarks
OUTPUT: Standard Hours	2,500	2,400				
	£	£	£	£	£	
COSTS						
Materials–Sheet	28,640	27,495	28,020		525	Scrap
Expanded	1,360	1,306	1,360		54	
Wire	4,600	4,416	4,108	308		Faulty R.M.
Labour– Presses	12,075	11,592	11,091	501		Labour Effy.U
Inspection	1,590	1,526	1,412	114		
Labouring	1,210	1,162	1,260		98	
Tools	480	460	476		16	
Consumables	465	447	507		60	
Power	760	730	728	2	132	
Maintenance	1,200	1,152	1,284			
	52,380	50,286	50,246	925	885	

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